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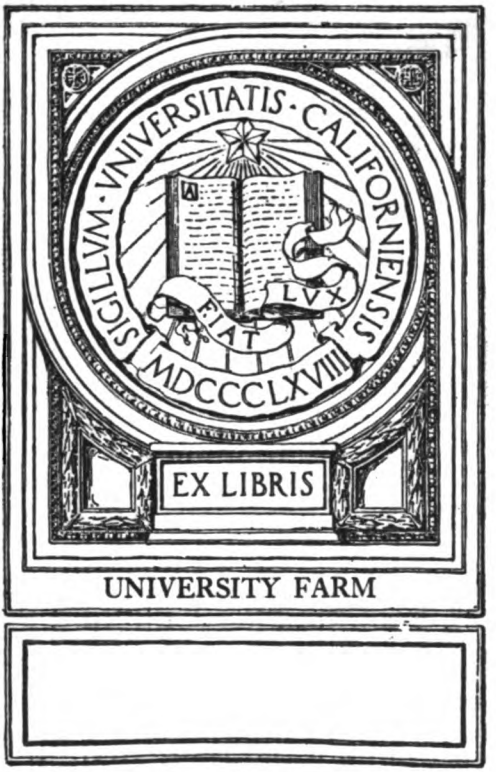

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JOHN A. HOWARD, OF HAMMOND, UNDER A PATTEN'S GREENING TREE.
Mr. Howard has one of the largest and most profitable orchards in Minnesota.

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Trees, Fruits and Flowers

—OF—

MINNESOTA.

1908.

EMBRACING THE TRANSACTIONS OF THE

MINNESOTA STATE HORTICULTURAL SOCIETY

FROM DECEMBER 1, 1907, TO DECEMBER 1, 1908. INCLUDING THE TWELVE NUMBERS OF THE "MINNESOTA HORTICULTURIST" FOR 1908.

EDITED BY THE SECRETARY,

A. W. LATHAM,

OFFICE AND LIBRARY, 206 KASOTA BLOCK,

MINNEAPOLIS, MINN.

Official Stenographer, A. G. Long, Excelsior, Minn.

VOL. XXXVI.

COLI

MINNEAPOLIS:
HARRISON & SMITH CO., PRINTERS.
1908.

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THE MINNESOTA HORTICULTURIST

Vol. 36 JANUARY, 1908. No. 1

President's Annual Address, 1907.

PROF. SAML. B. GREEN, ST. ANTHONY PARK.

Members of the Minnesota State Horticultural Society:

Ladies and Gentlemen:—We are now in session as the forty-first annual meeting of our society. Some of us have come together to enjoy the pleasure of comparing our horticultural experiences with those of kindred minds in delightful association; others have come here, perhaps for the first time, to learn the latest and best methods in horticulture from those of riper experience.

Horticulture is an art of endless possibilities and changes, and no person of experience in such matters ever feels that he knows it all. Its devotees are generally altruistic, enthusiastic and optimistic, and have no secrets. They take pleasure in helping the beginner to get started, even though by so doing they increase the competition that they themselves are destined to meet. As a business horticulture differs from most others in this respect, and yet those who succeed best in it have broadening qualities in large measure. It is always a pleasure to meet with such people.

The policy of our society is that of doing anything in a horticultural way that may be helpful to mankind. Our work is broad, and we are willing to co-operate with all other states in an endeavor to build up a system of horticulture adapted to our special field of labors.

When the South Dakota Horticultural Society was weak and needed help we did what we could to advance its interests, and we are pleased to know that it is now established and prosperous.

For a number of years we have permitted the North Dakota Horticultural Society to unite with us on the basis of an auxiliary society, the same as if its work was confined to Minnesota limits. I believe that such broad helpfulness must necessarily have a beneficial reaction upon our membership, and that the people of Minnesota would desire us to do in this particular just what we are doing.

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I congratulate our society upon its large and increasing membership, it now having reached nearly 2,500. This has come not only from the fact that we have adopted a broad and liberal policy but that we have, as well, attended carefully to details and to the needs of our membership through our secretary's office, which has been administered in a very able and efficient way. The outlook for fruit growing and vegetable growing, and for the growing of flowers and ornamental plants generally, and for the building up of home surroundings by tasteful horticultural efforts, was never so promising as today. The good work we have done has been rewarded with great fruitfulness, and opportunities for doing better work in the future are exceedingly bright.

Conditions in Minnesota are more settled than formerly, and our people have got away from the "hand to mouth" stage of frontier development which characterizes every new community. Of late years there has been a great increase of wealth, education and refinement in Minnesota, and as the logical outcome of such progress there is a greater interest taken in horticultural matters and rural affairs generally. Horticulture is an art that has always interested the highest and brightest, and flourished with the greatest development of the human mind, to whose best growth it has contributed in no mean measure. We find, therefore, under the favorable conditions of today a great increase of interest in horticultural things and a general desire among our people to make their homes (both inside and out) an expression of the best that is in them, and as a combined result of this our people take greater interest in the improvement of our schools, our streets, parks and play-grounds, general government and all those things that naturally group themselves under the term, civic pride.

Agricultural Education. In my opinion there is no subject of greater importance to the development of this country than that of industrial education, and nothing in which we are so far short of attaining that which is most desirable. The opportunity for a child to acquire the ability to support himself, it seems to me, is one that should be afforded him first of all. Perhaps more unhappiness is caused by lack of ability to use skillfully one's hands, as well as brains, as a means of livelihood, than in any other way. Applying this especially to agricultural education, in which we are most interested, it may be well to refer briefly to something of the advance made in this particular line and its relationship to our special horticultural phase of it.

Less than twenty years ago agricultural education was in bad repute throughout the whole of this country. Since that time, however,

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it has made wonderful progress and has been an important factor in bettering rural conditions and in bringing about a "return to the country" cry, which is destined to have an important and helpful bearing on national development. To make this matter specific, I will refer to the progress made in this line in Minnesota.

Twenty years ago there was but one student in the agricultural department of the University of Minnesota, and one professor was supposed to teach all subjects pertaining especially to horticulture and agriculture, animal husbandry and dairying, and also devote considerable time to the farmers' institute work—and a small, sandy farm supplied the sole opportunity for experiment and practice work. At that time there was a general feeling that there was no use in educating a man to be a farmer or horticulturist, that these were menial occupations and could not command the attention of educated minds. In my opinion this attitude of the general public toward the subject was due to the meager amount of agricultural information in the hands of our educators and a lack of desire on their part to come in close touch with practical affairs. The change of front among educators in this respect has been interesting, and the development in agricultural education during the last decade has been astonishing.

From a small and unimportant affair, in twenty years the agricultural department has grown until in the past year there were enrolled in the agricultural department of the university 854 students in all its courses, and these were all bona fide agricultural students. The work of teaching special agricultural subjects has been divided up until we have professors of agriculture, dairying, animal husbandry, horticulture, agricultural chemistry, with about twenty assistant professors and instructors in these lines. The land in the hands of the regents for experiment and demonstration purposes is now about 1,500 acres, including three sub-stations situated in various portions of the state. The probable total expense of the agricultural department of the University of Minnesota in 1886 was not far from six or eight thousand dollars per year, and last year the amount paid out for the support of the agricultural department amounted to about $140,000, of which the national government pays about one-half. In the twenty-seven years between 1860 to 1887 about twenty students attended the agricultural department. Since 1887 (i. e. in nineteen years) 4,600 students have attended one or more terms of work in the agricultural department, and they have gone out into this and other states where they have been, as it were, missionaries, leavening the great agricultural and horticultural lump, and have helped in no mean way to bring

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about the great development in rural life which has characterized the last decade. Education of this character should be made as free as water for those who wish to partake of it. From a merely utilitarian standpoint it is a profitable national and state undertaking, while from the standpoint of the individual, opportunities are greatly increased for those who have such training. But it is really true that nothing really helps the great mass of individuals which does not help the state.

Twenty years ago agricultural and horticultural experimentation was hardly known in this country. Today our agricultural experiment stations form the great reliable source of information for our rural population and contribute immensely to its welfare. The outlook is that in the near future there will be a great extension of this form of education, which has proven itself to be so helpful. In our last legislature bills were passed by both bodies, either one of which would have more than doubled the annual outlay for agricultural education had there been concurrence.

Fruit Farm. A year ago our society endorsed a proposition to ask the legislature for a fruit breeding farm which we felt was necessary in order to properly advance our interests in the great subject of improvement of plants. The bill as presented to our society successfully passed the legislature and is now a law. It provides an appropriation of $16,000 for a fruit farm and $2,000 per year annually for maintenance. This farm has been purchased at Zumbra Heights station, on the M. & St. L. Railway, near Lake Minnetonka, and the land in quality and aspect is almost ideal for the purpose. Seventy-eight acres were bought outright and condemnation proceedings have been started to take twenty acres more adjoining, which could not be bought at a satisfactory figure. The $2,000 for maintenance has been supplemented by other funds, so that we have available for the support of this farm about $3,600. A new dwelling house for the foreman, a greenhouse 18x50 ft., and a storage cellar 25x50 ft. are now nearly completed. Mr. Chas. Haralson, of Brookings, South Dakota, has been appointed superintendent of this farm, and we believe him a man well able to make the work a success. A large amount of material especially adapted for fruit breeding purposes has been turned over to this farm by the Central Experiment Station, at St. Anthony Park, and it is expected that hereafter the work in fruit breeding and fruit growing will be done at this place. This farm is of easy access from the railway station at Zumbra Heights.

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The law giving us this farm provides that it shall be selected by the Board of Regents with the approval of the executive committee of the State Horticultural Society, which clause was fully carried out in spirit as well as in letter. The bill also provides that the farm shall be annually inspected by a special committee of the State Horticultural Society, appointed by your executive board, which shall report to the Board of Regents with recommendations for its management. The property is thus held and managed by the Board of Regents, but the State Horticultural Society is an important factor in its management in an advisory way.

I take pleasure in congratulating our society upon the influential standing of its membership, as was shown in the legislature when we presented the bill providing for this farm, for after our membership had taken up the matter with their representatives in the legislature the bill met with little or no opposition and was, I think, the only bill passed at the last session that included an annual appropriation. This bill passed both bodies by unanimous vote.

Forestry. One of the most important economic questions which presents itself to the American people today is that of replacing a portion of the great forest wealth that we inherited and which is now so nearly used up, but which has been a most important factor in the development of our country. Unquestionably the land best adapted to agriculture and horticulture should be used for growing crops, but when all of this class of land has been used to best advantage there is still an enormous area which is far better adapted to forest growth than to any other purpose. The worst feature of this whole proposition is the lack of an understanding among the American people in what forest wealth really consists and of how it should be managed on business principles. We have worked our forests as if they were mines, which could never again produce more wealth, and have lost sight of the fact that a forest is a crop and will grow again.

It will be evident to any one on a little thought that it is necessary to have a certain amount of trees on a given piece of land in order to get an annual increase, and that for best results these trees should be of the most valuable kinds that the land will produce, and that even if these trees are small they have a present value based on their value at maturity. What we have done in the management of this forest wealth has been not only to take the increase which had been stored up for us by a bounteous Providence, but we have destroyed the capital stock as well, and are now in the position of a partially reformed spendthrift who is trying to atone for past recklessness. There can be

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no question but what it will be very expensive to put our forest lands into good condition. On the other hand, there can be no reasonable doubt but what such treatment is extremely desirable from any broad and sensible standpoint. There is some talk occasionally that to do this would mean a sacrificing on the part of the present generation for posterity. It seems to me that an objection of this kind is too small for a good American, and that any far-sighted, strong-minded person should be ashamed of such an apology for failure to take an interest in the general subject of forestry. It is doing for posterity that makes the present generation so strong.

Itasca State Park. Our State Horticultural Society has, for many years, helped along the progressive forestry movement in this state and has aided much in bringing about important forestry legislation, and you will recall that at the last meeting of our society, when the Forestry Association held its session, there was presented the subject of securing Itasca Park as a forest reserve, to be used as an adjunct in the teaching of forestry in the State University. While our society was not especially prominent in pushing legislation looking to this end. it published one nicely illustrated article in regard to the matter that was of much service to those who were working up the subject, and in various other minor ways helped along the movement which resulted in the passage by the last legislature of a bill which sets Itasca Park over to the Forestry Board, provides opportunity for forest instruction therein under the Board of Regents and secured appropriations therefor amounting to $7,000 for the biennial period.

We now have, therefore, a most interesting and in every way desirable forest tract adapted for experiments in forestry, and it is the intention of the forestry board, as well as of the Board of Regents, to make this tract an ideal forest, while at the same time preserving its important park features.

We shall aim to make the students' work in this park intensely practical, and the course in forestry in the university has been so arranged as to require seven months' instruction within the park limits before graduation. It is the intention to have students in the park from the last of March until the middle of September, during which time they will have about as much time in the classroom as in the field. In this way we believe we can turn out thoroughly trained practical men who will be of great service to the state in handling its enormous forest wealth, a large part of which has been lost or is liable to be lost by improper handling. The most important element in solving the forestry problem here and elsewhere will be young men who are trained in this subject.

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Co-operation. As civilization advances the obligation of mankind to unite together for the purpose of promoting that which is mutually beneficial is greatly increased. In all lines of endeavor we see today a tendency towards united efforts, because in that way destructive competition is prevented and the opportunities of individuals are greatly increased; and while a power like this may be used for ignoble ends, yet there can be no question but what the outlook for the future is that by proper co-operation mankind will be greatly benefited.

In this connection I wish particularly to refer to the spirit of co-operation among fruit growers, which is in keeping with the spirit of the times and which has proven so exceedingly successful where it has been attempted under good conditions.

There can be no question but what a business like small fruit growing, which can be carried on in a small way by a large number of persons, is greatly helped by proper co-operation in the way of purchasing supplies and marketing the combined product. In some past years we have devoted a considerable amount of time on our program to the discussion of this subject. This year, however, it has seemed best to forego it and take up other matters, but the officers of your society are deeply interested in this subject and are mindful of its importance. I therefore thought it best to refer to it in this brief way at this time, as it is an important and timely matter.

Seedlings. A number of years ago our society adopted the policy of encouraging the raising of seedling apples by its members and others, and much good has resulted from it. In this connection I wish to pay a tribute to the late Peter M. Gideon, who was a pioneer in this good work and showed its great value when he distributed something over 10,000 apple seedlings in the spring of 1888, selling them at a price of $1.00 per hundred. The results of this wise distribution are plainly to be seen in many seedling fruits that are to be found throughout this section. I think this work is especially important, as from it have come what are practically a large number of voluntary seedling experiment stations which are maintained without cost and have added to the interest and enthusiasm of horticulturists.

Every right-thinking person likes to be the creator of something that is going to be helpful to the human race, and there is always the pleasant possibility that the seedlings one has growing may have in them the germs of that which will contribute very materially to the future welfare of our people. This is especially important in a section like ours, where we are developing a system of horticulture of our own.

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Nursery Stock. The annual sales of nursery stock in Minnesota are very large and increasing each year; also there is an increasing number of planters who are able to discriminate intelligently as to the kind of nursery stock to purchase. On the other hand, there are a large number of amateurs each year who take up the subject of horticulture for the first time, and it is very desirable that they do not get discouraged as the result of injudicious planting.

The men engaged in the nursery business are as honorable as men in other lines of business, but on account of the peculiar nature of the stock which they handle and the large number of agents which they have out, it is difficult for them to exercise the supervision over their sales that is desirable and which is quite practicable in many another business. On account of the possibilities of easy misrepresentation in nursery stock it is not difficult for unscrupulous persons to sell that which cost them little at a high price, and which is of no benefit to those who receive it. Each year many beginners suffer from buying plants that are perfectly satisfactory in another climate but are worthless here. On this account I would especially call the attention of beginners in horticulture to the importance of carefully discriminating as to the people with whom they deal, and to select only the nursery concern which is honest and reliable and has an established business. I would also suggest that they plant standard sorts and forego any extensive planting of novelties. The planting lists of this society form a safe guide for planters.

Danger from Root-Killing. There has been a tremendous increase in apple orchards and in the fruit interests generally in Minnesota within the last few years, and the profit from such work has been so satisfactory that the near future will see a great increase in acreage devoted to the apple. I fear that many inexperienced planters have too much a feeling of security, and yet I would not discourage such plantings for I believe they are justified. But there are certain possible climatic injuries to these fruits that we should have continually before us that we may guard against them. There is danger of serious injury from root-killing to our apple orchards. The danger is not great, and I would not for a moment check the enthusiasm which is now leading us along so hopefully, but I would put in just a word of caution and recommend to orchardists that in severe winters, especially when there is little if any snowfall, that they see to it that the soil about the roots of their trees is protected by a mulch of some kind. In the case of the grower of a few apple trees for home use, it seems to me important to emphasize the need of protection to the trunk and mulching the soil over the roots.

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Auxiliary Societies. The practice of forming auxiliary societies, which has been a part of the policy of our society for many years, is one of much importance, and a broad policy of this kind, properly carried out, will undoubtedly bring about a desirable spread of horticultural information. Such societies group together in a mobile and efficient way persons who are especially interested in kindred lines and make them very effective and helpful. I refer of course to the following auxiliary societies:

State Forestry Association, Minnesota Rose Society, Bee-keepers' Society, Plant Breeders' Auxiliary, Woman's Auxiliary, South Minnesota Society, Red River Valley Society, Kandiyohi County Society, and a number of others.

The county as a unit for horticultural societies has often failed. It would undoubtedly be a great help to the state as a whole, and the cause of horticulture in particular, if we could have a good, live horticultural society in every county, but wherever such society is a success it is without exception the result of a lot of self-sacrificing effort on the part of one or a few individuals who are desirous of promoting the work. Auxiliary horticultural societies should be formed wherever there is sufficient horticultural interest to make it worth while, and whether there is one or more in a county must depend upon the interest taken in the subject and local conditions.

Apples in Fillmore County in 1907.

O. W. MOORE, SPRING VALLEY.

Reports of the number of car loads of apples shipped from the different stations in Fillmore county during the apple season of 1907:

Mabel	4 cars
Canton	4 cars
Harmony	4 cars
Preston	15 cars
Chatfield	20 cars
Wykoff	8 cars
Lanesboro	5 cars
Rushford	5 cars
Spring Valley	13 cars

The aggregate of this is 78 cars, which at 160 barrels to the car gives us 12,480 barrels. This is no question but what this report is correct, as Mr. C. E. Snyder, of Preston, furnished the facts, and he must know, as he bought and shipped these apples from all of the above mentioned stations except Spring Valley.

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Annual Meeting, 1907, Minnesota State Horticultural Society.

A. W. LATHAM, SEC'Y.

The forty-first annual meeting of the Minnesota State Horticultural Society closed at five o'clock on the evening of Friday, Dec. 6th, with a few appropriate words by the president, thus bringing to a termination the largest, most enthusiastic and most intensely interesting gathering of the kind that has ever been held in our state. The attendance from the beginning of the first session on Tuesday morning at 9:45 o'clock was phenomenal. Indications pointed to the presence of a large number of our members, but not so many as were there. Approximately 300 were in attendance at the opening of the meeting, and no session passed without at least 150 in the hall, with a goodly proportion of the members at all times in the fruit room below. The interest was something to be wondered at, beginning with the president's address as the first number on the program, and increasing with each session to the close.

The program although an exceedingly full one—the writer may say without offense, probably an overfull one, as he alone would be the person to be blamed—was carried out in its entirety with scarcely a break, and no session was commenced with something left over from a previous session to interfere with taking up the program in its regular order. Out of approximately seventy people on the program only two numbers were missing,—a remarkable showing. As the program is found in full in the report of 1907, as also in the December number of our monthly, it need not be referred to seriatim here, but there are a few special and in a sense novel features which should receive special notice.

There were two demonstration exercises in the art of grafting and budding given by Mr. A. R. Kohler, an assistant in the horticultural department at the State Experiment Station, occupying a half hour each, at the beginning of the Tuesday and Thursday afternoon sessions, that were occasions of special interest. Mr. Kohler had taken great pains to prepare a full exhibit of the various methods of grafting and budding, including the material and implements used in this work, and showed before the meeting the actual process of the work, accompanying this process with practical instruction. While this exercise was originally intended for the benefit of amateurs, it was found

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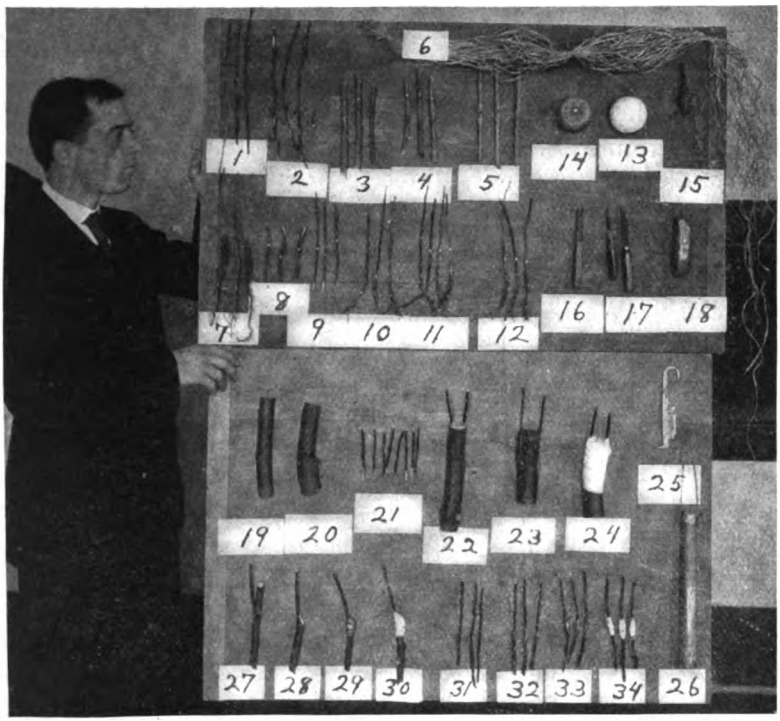

Mr. A. R. Kohler and his demonstration in grafting, presented at the annual meeting.

1 to 5. Different stages of operation of budding.
  1. The budsticks.
  2. The buds partly removed for insertion.
  3. The incision made in the stock to receive the bud.
  4. The bud inserted.
  5. The bud wrapped with raffia.
6. Raffia.
7 to 12. Different stages in the process of root grafting.
  7. Seedlings used to graft on, called "stocks."
  8. Stocks cut for grafting.
  9. Scions cut for grafting.
  10. Scion and stock put together.
  11. Grafts wrapped with wax cord.
  12. Grafts wrapped with waxed cloth, another method.
13. No. 26 knitting cotton used for making waxed cord.
14. Ball of waxed cord. Made by dipping knitting cotton into soft wax while melted.
15. Roll of waxed cloth.
16. Grafting knife.
17. Two types of budding knives.
18. Stick of soft grafting wax for topworking.
19 to 24. Different stages in process of cleft-grafting as used in top-working.
  19. The stub cut ready for the cleft.
  20. The cleft made.
  21. Scions prepared for insertion into the cleft.
  22. The scions inserted.
  23. The stub waxed.
  24. Wrapped with cloth.
25. Grafting chisel.
26. Mallet.
27 to 30. Different stages in the process of side-grafting as used in topworking.
  27. The scion inserted.
  28. The branch cut off above the scion.
  29. The union waxed.
  30. The union wrapped.
31 to 34. Stages in the process of whip-grafting as used in top working very small trees.
  31. Scion placed on stock.
  32. Union wrapped with waxed cord.
  33. Union waxed.
  34. Union wrapped with cloth.

to be of special interest to even those most practiced in the art and called together a very large attendance. Very much the same thing may be said of the exercise in cross-fertilization of fruit flowers, conducted in two separate half-hour periods by Mr. Leroy Cady, also an assistant in the horticultural department, and although a similar exercise had been conducted at the meeting a year ago there was ap-

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parently an equal interest in this one, which we hope will result in the hand-fertilization of many fruit flowers the coming spring, the seed grown from the fruit so hand-fertilized to be used in growing seedlings for the benefit of the plant-breeding work of the society.

There were three periods in which the stereoptican was used, one at the close of each of the first three days of the meeting. Prof. C. P. Bull occupied one of these periods, describing the process by which one flower fertilizes another, or the hybrid is formed. Only three plates were used with this talk, which was a very instructive one. At the close of the Wednesday afternoon session, Dr. Thos. S. Roberts occupied the best part of an hour with many beautiful pictures of our native birds, accompanied by a running talk descriptive of their habits and value or otherwise to horticulture. At the close of the Thursday afternoon session Mr. P. V. Collins, of the Northwestern Agriculturist, favored the society with a stereoptican lecture on Mexico, dealing largely with the unusual and historical. This lecture was largely attended and fully enjoyed by us all.

The practice of uniting during parts of sessions with some of the auxiliary societies was extended successfully at this meeting by including with the Forestry Association and the Woman's Auxiliary another period given to the Minnesota Rose Society. These three auxiliary organizations gave us each an interesting program, adding thereby to the variety of the meeting, and considerably to the attendance of these special sessions. As all the papers presented and addresses given will appear from time to time in our monthly, the value of these various sessions by the auxiliary societies can be readily noted by reference to the program.

Many visitors were with us from other states, and it is needless to say that they added wonderfully to the interest and value of the occasion. We should note C. S. Harrison of York, Nebr., representing the Nebraska Society; W. H. Guilford of Dubuque, Ia., representing the Northeastern Iowa Society; G. A. Tracy and Prof. N. E. Hansen, president and secretary respectively of the South Dakota Society; Prof. C. B. Waldron, president of the North Dakota Society and W. S. Hager, of DePere, Wis., delegate from the Wisconsin Society.

Others in attendance from Wisconsin were A. D. Brown, Baraboo, and our old friends who are ever with us Miss Gertrude M. Cairns, of Ellsworth, Wis.; Geo. J. Kellogg of Lake Mills, Wis.; and A. J. Philips of West Salem, Wis. It would be an unheard of thing for us to have a successful meeting without the presence of these three last named, and we hope to have them with us for many years to come.

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The United States Department of Agriculture was mindful of the needs of this far away region and sent us as representative Hon. G. B. Brackett, the pomologist of the department. They couldn't have done better; Mr. Brackett was representative in the fullest sense of term. He was with us when the meeting opened and stayed with us till the close. He contributed materially to the deliberations of the society in most happy ways, delivering at a convenient point in the program—which had been arranged before we knew he was coming—a short address full of sound advice and encouraging suggestions along lines of special interest to the Minnesota horticulturist. He spoke briefly and happily at our banquet, and we are glad he came. The pleasure of knowing Mr. Brackett is with many of our members now a personal one, and to all of us his presence was an inspiration.

A notable addition to our meeting was the presence of Mr. Chas. G. Patten, of Charles City, Ia., whose counsels were of special value to us in the sessions devoted more particularly to plant breeding. Mr. Patten was accompanied by his son, H. G., and together they set up and cared for a most interesting exhibit of seedling apples from the experimental orchards of Mr. Patten. At a convenient time during the session an address was delivered by Mr. Patten on the general subject of breeding new varieties of apples, illustrating his learned thought with many new varieties originated on his place at Charles City. Further reference to this valuable exhibit will be made later in this report.

The "question and answer" exercises are a comparatively new feature in our program, occupying as they did the first half hour of several morning sessions and covering the general subject of fruit growing. They were led by the institute workers of our society, and attracted a large audience. These features of the meeting were fully taken down by the reporter, and will be found in our monthly during the year.

A somewhat detailed report of the president's address would be given with this report were it not published in this number of the magazine, and to this our readers are referred. It is well worth careful reading. Many points that he referred to in his address were elaborated by him further along in the course of the meeting at points on the program where his name appears.

In speaking of visitors we must not fail to note the presence with us of Mr. C. F. Gardner, of Osage, Ia., whose genial ways have endeared him to us during the many times that he has been present at our annual gatherings.

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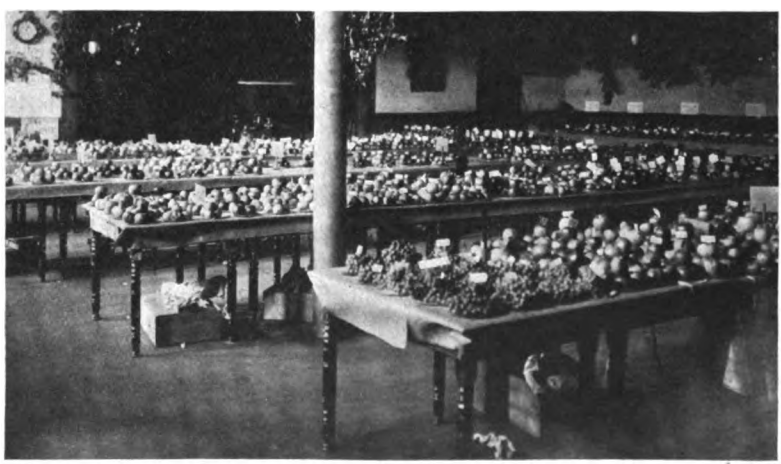
A report of this meeting would be incomplete without special reference to a resolution introduced asking for the appointment of a committee to co-operate with a similar committee from the societies of neighboring states, looking towards the securing of substantial recognition for Mr. Chas. G. Patten in his invaluable work as an originator of new fruits. An expression by one of the speakers in the interest of this resolution to the effect that Mr. Patten had done work of greater value for this part of the country in the origination of new fruits than Luther Burbank had for the Pacific Coast, brought forth a hearty response. A committee consisting of Thos. E. Cashman, Clarence Wedge and S. D. Richardson was appointed by the president in pursuance of this resolution, and at the time of this writing, Dec. 11th, at least one member of this committee is in session with the Iowa Horticultural Society in part to present this matter to that organization.

How can we speak in detail of all those who assisted in manifold ways to make this meeting such a success,—the assistance in the fruit room, the ushers and members of the reception committee giving their time and thought to this service, those accepting places on the program, paying their own expenses back and forth to perform this service for the society. There are too many of them to speak of in detail, but their sacrifice in this cause is noted, and the efforts they cheerfully



Glimpse of fruit exhibit at annual meeting.

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put forth are bearing fruit of the greatest value to the horticulture of this region.

As to the fruit exhibit, which was just large enough for the basement room and filled it to its fullest extent, it is almost enough to say that it compared most favorably with the general meeting in the auditorium above. There were exhibited in all 1,155 plates of fruit, not including in this estimate a number of piles of apples built up by private exhibitors, and also 32 pecks of apples, mostly of the kinds for which premiums are offered, though a few were shown by enthusiastic exhibitors just to help out the display. There were eighteen plates of grapes, 438 single plates of apples, five collections of ten varieties of apples, seven collections of top-worked apples, 110 single plates of seedling apples and five collections of seedling apples.

The opportunity given of late years for neighboring states to compete in the seedling class brought in twenty-five plates of apples by A. D. Brown, of Wisconsin, most of which, however, were not entered for premium; a collection of thirty plates of top-worked apples besides an unknown number of varieties of seedlings by Mr. Philips, and seventy-five plates by Mr. Charles G. Patten. Of Mr. Patten's collection fifty-five were varieties of seedlings of his origination. We hope to publish before long a description of this exhibit by Mr. Patten, which will note considerably in detail its more important features.

The Experiment Station at Owatonna, under the charge of Thos. E. Cashman, exhibited forty-five plates of seedlings. Particulars in regard to this exhibit are not at hand as this report is being written. Its general appearance, however, indicated the value of the work being carried on at that station, which must certainly bring forth valuable results in the early future. The list of awards following will in a measure tell the story somewhat in detail of this remarkable exhibit.

There were a few plates of nuts shown, the exact details of this exhibit, however, not being at present available.

As to the annual banquet of the society it is enough to note that it was up to the usual standard of a royal good time, and that an unusual number, 157, availed themselves of this opportunity to fraternize around the table in a jovial way. Prof. Wm. Robertson, from Crookston, held down the chair as toastmaster, and others, all of whom we are under obligations to for the successful rendering of their parts, followed as shown by this program:

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TOASTMASTER: PROF. WM. ROBERTSON, Crookston.
GRACE: REV. GEO. S. INNIS, Hamline.

PROGRAM.

1. Opening song .....Trafford N. Jayne, Minneapolis.
2. We go some—and what do we leave behind but a few undecipherable tracks! .....A. G. Long, Ye Reporter.
3. Reading .....Miss Fay Latham, Howard Lake.
4. Song .....Mrs. R. B. Fillmore, Minneapolis.
5. A horticulturist—or what? ..... Miss Gertrude M. Cairns, Ellsworth, Wis.
6. Theory and practice in horticulture—the Scylla and Charybdis of suburban life ....F. H. Boardman, Minneapolis.
7. Song .....Trafford N. Jayne.
8. Reading .....Miss Fay Latham.
9. Our successes and failures—may they all be helpful!.... .. A. J. Philips, West Salem, Wis.
10. Closing song—Auld Lang Syne.

Award of Premiums, Annual Meeting, 1907, Minnesota State Horticultural Society.

APPLES—SINGLE PLATES.

Salome	R. A. Schutz, Le Roy	Special	$0.75
Ben Davis	Fred Zuercher, Excelsior	Third	.30
Fameuse	W. J. Tingley, Withrow	Second	.40
Faribault	" "	Second	.40
Anisim	J. A. Howard, Hammond	First	.50
Anis	" "	First	.50
Borovinca	" "	Third	.30
Christmas	" "	Second	.40
Fameuse	" "	Third	.30
Forsberg	" "	First	.50
Giant Swaar	" "	First	.50
Gilbert	" "	Second	.40
Golden Russet	" "	First	.50
Grundy	" "	First	.50
Haas	" "	First	.50
Hutchins	" "	First	.50
Ia. Beauty	" "	Second	.40
Jewell's Winter	" "	Fourth	.20
Judson	" "	First	.50
Lord's L.	" "	Third	.30
Malinda	" "	Fourth	.20
Newell's	" "	First	.50
Plumb's Cider	" "	First	.50
Rollin's Prolific	" "	First	.50
St. Lawrence	" "	Second	.40
Scott's Winter	" "	First	.50
Sugar Loaf	" "	First	.50
Utter	" "	Second	.40
University	" "	Fourth	.20
White Pigeon	" "	First	.50
Yahnke	" "	Second	.40
Yellow Sweet	" "	First	.50
Charlamoff	" "	Third	.30
Duchess	" "	Third	.30
McMahon	" "	First	.50
Okabena	" "	First	.50
Peter	" "	Fourth	.20
Wolf River	" "	Second	.40
Whitney	Mrs. M. A. Knowles, Excelsior	First	.50
Patten's Greening	H. H. Pond, Minneapolis	Fourth	.20
Peerless	" "	First	.50

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Faribault	" "	First	.50
Ben Davis	" "	First	.50
Repka Malenka	" "	Third	.30
Okabena	J. O. Weld, Mound	Fourth	.20
Malinda	" "	Second	.40
Christmas	John R. Cummins, Eden Prairie	Third	.30
Walbridge	" "	Fourth	.20
Walbridge	L. W. Prosser, Le Roy	First	.50
Malinda	H. H. S. Rowell, Excelsior	Fourth	.20
Whitney	" "	Second	.40
Gideon	" "	First	.50
Walbridge	G. A. Anderson, Renville	Third	.30
Anisim	Thos. Redpath, Wayzata	Third	.30
Antonovka	" "	Third	.30
Brett	" "	Third	.30
Borovinca	" "	Fourth	.20
Charlamoff	" "	Second	.40
Lord's L.	" "	First	.50
Peter	" "	Third	.30
University	" "	Third	.30
Charlamoff	S. R. Spates, Wayzata	First	.50
Duchess	" "	First	.50
Borovinca	" "	Second	.40
Jewell's Winter	" "	Third	.30
Hibernal	" "	Second	.40
N. W. Greening	" "	Fourth	.20
Patten's Greening	" "	Third	.30
Peerless	" "	Second	.40
Ben Davis	Walter A. Yahnke, Winona	Second	.40
Fameuse	" "	Fourth	.20
Forsberg	" "	Second	.40
Giant Swaar	" "	Second	.40
Gilbert	" "	Third	.30
Golden Russet	" "	Second	.40
Haas	" "	Second	.40
Hutchins	" "	Second	.40
Judson	" "	Second	.40
Lord's L.	" "	Second	.40
Plumb's Cider	" "	Second	.40
St. Lawrence	" "	First	.50
Sugar Loaf	" "	Second	.40
Walbridge	" "	Second	.40
Yahnke	" "	First	.50
N. W. Greening	" "	Third	.30
Wealthy	" "	First	.50
Okabena	Jewell Nurs. Co., Lake City	Second	.40
McMahon	" "	Fourth	.20
Forsberg	" "	Third	.30
Gilbert	" "	First	.50
Jewell's Winter	" "	First	.50
Ben Davis	" "	Fourth	.20
Judson	" "	Fourth	.20
Cross	" "	Second	.40
Gideon	" "	Third	.30
Brett	" "	Fourth	.20
Wealthy	" "	Third	.30
Wealthy	Fred Zuercher, Excelisor	Fourth	.20
University	" "	First	.50
Wolf River	" "	First	.50
Longfield	" "	Third	.30
N. W. Greening	" "	First	.50
Scott's Winter	" "	Third	.30
Peerless	" "	Third	.30
N. W. Greening	P. H. Perry, Excelsior	Second	.40
Patten's Greening	" "	Second	.40
Peter	" "	Second	.40
Longfield	" "	First	.50
Brett	" "	Second	.40
Scott's Winter	" "	Second	.40
Hibernal	" "	First	.50
Yellow Transparent	" "	First	.50
Duchess	" "	Second	.40
Borovinca	" "	First	.50
Wolf River	" "	Fourth	.20
Antonovka	D. T. Wheaton, Morris	First	.50
Ia. Beauty	" "	Third	.30
Dartt	" "	First	.50
Gideon	H. F. Bussee, Merriam Pk	Second	.40
Jewell's Winter	" "	Second	.40

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Repka Malenka	" "	Second	.40
University	" "	Second	.40
Wolf River	S. D. Richardson, Winnebago	Third	.30
Hibernal	H. F. Busse	Fourth	.20
McMahon	" "	Third	.30
Okabena	" "	Third	.30
Patten's Greening	" "	First	.50
Wealthy	" "	Second	.40
Lyman's Prolific	" "	Second	.40
Orange	" "	First	.50
Shields	" "	First	.50
Virginia	" "	First	.50
Duchess	P. Clausen, Albert Lea	Fourth	.20
Malinda	" "	First	.50
Lyman's Prolific	H. H. Pond, Minneapolis	First	.50
Christmas	A. B. Lyman, Excelsior	First	.50
Utter	" "	First	.50
Longfield	Gust Johnson, Excelsior	Second	.40
Repka Malenka	" "	First	.50
Anisim	" "	Fourth	.20
Peter	" "	First	.50
Transcendent	" "	First	.50
Charlamoff	" "	Fourth	.20
McMahon	" "	Second	.40
Peerless	" "	Fourth	.20
Anisim	P. H. Frye, Willmar	Second	.40
Hibernal	W. L. Parker, Farmington	Third	.30
Brett	" "	First	.50
Longfield	" "	Fourth	.20
Iowa Beauty	" "	First	.50
Judson	" "	Third	.30
Cross	" "	First	.50
Fameuse	" "	First	.50
Antonovka	" "	Second	.40
Gideon	" "	Fourth	.20
Repka Malenka	" "	Fourth	.20
Malinda	O. F. Brand, Faribault	Third	.30

J. P. ANDREWS, Judge.

COLLECTION, TEN VARIETIES.

Collection, ten varieties	J. A. Howard, Hammond	First	6.00
Collection, ten varieties	S. R. Spates, Wayzata	Second	4.00
Collection, ten varieties	Walter A. Yahnke, Winona	Third	2.00
Collection, ten varieties	Fred Zuercher, Excelsior	Fourth	1.00

GEO. W. STRAND, Judge.

COLLECTION, TOP-WORKED.

Collection, top-worked	J. A. Howard, Hammond	First	8.00
Collection, top-worked	John Bisbee, Madelia	Second	6.00
Collection, top-worked	Seth. H. Kenney, Waterville	Third	4.00
Collection, top-worked	P. Clausen, Albert Lea	Fourth	2.00
Collection, top-worked	A. J. Philips, West Salem, Wis	Special	5.00

GEO. W. STRAND, Judge.

PECKS OF APPLES.

Wealthy	J. A. Howard, Hammond	First	4 00
N. W. Greening	" "	Third	2.00
Wealthy	J. O. Weld, Mound	Third	2.00
N. W. Greening	" "	Second	3.00
Wealthy	H. H. S. Rowell, Excelsior	Second	3.00
Patten's Greening	S. R. Spates, Wayzata	Second	3.00
N. W. Greening	P. H. Perry, Excelsior	First	4 00
Patten's Greening	Fred Zuercher, Excelsior	First	4 00
Patten's Greening	Gust. Johnson, Excelsior	Third	2.00

DEWAIN COOK, Judge.

COLLECTION, WINTER SEEDLINGS.

Col. of winter seedlings	H. H. Pond, Minneapolis	Fourth	2.00
Col. of winter seedlings	T. E. Perkins, Red Wing	Second	6.00
Col. of winter seedlings	A. B. Lyman, Excelsior	Third	4 00
Col. of winter seedlings	C. G. Patten, Chas. City, Ia	First	8.00

WYMAN ELLIOT,
CLARENCE WEDGE,
N. E. HANSEN, Judges.

EARLY WINTER SEEDLINGS.

	O. F. Brand & Son, Faribault		4.18
No. 100	A. B. Lyman, Excelsior		4.00
No. 101	" "		4.14
	J. A. Howard, Hammond	Third	4.23
	Gertrude M. Cairns, Ellsworth, Wis		3.48

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	H. H. Pond, Minneapolis		3.53
	Thos. Redpath, Wayzata		3.72
	A. J. Philips, West Salem, Wis.		4.00
	" "	Second	4.25
Malinda No. 10	C. G. Patten & Son, Chas. City, Ia.	First	4.47

WYMAN ELLIOT,
CLARENCE WEDGE,
N. E. HANSEN, Judges.

LATE WINTER SEEDLINGS.

Roman Stem X seedling	C. G. Patten & Son, Chas. City, Ia.		1.00
Gideon's Mary X Jonathan No. 2	" "		1.00
	" "		1.00
Ben Davis seedling	" "		5.05
Patten's Greening X Grime's Golden No. 1	" "		1.00
Brilliant	" "		1.00
Patten's Greening No. 9	" "		1.00
Patten's Greening X Grime's Golden No. 3	" "		4.90
Silas Wilson	" "	Second	5.17
Patten's Greening X Seek-no-Further	" "		5.00
	Edson Gaylord, Nora Springs, Ia.		1.00
	" "	Special	2.00
No. 90	A. B. Lyman, Excelsior		1.00
	Martin Stoa, Albert Lea		4.75
"Pella"	Edward Rhoades, Hortonville, Wis.		1.00
	M. L. Gjestrum, Mankato		1.00
	J. S. Decker, Austin		1.00
	" "		1.00
	A. J. Philips, West Salem, Wis.	Third	5.10
	H. H. Pond, Minneapolis		1.00
Gem City	A. D. Brown, Baraboo, Wis.		1.00
	" "	First	5 25
Prosser	L. W. Prosser, Le Roy		5.05
Prosser No. 2	" "		1.00
	G. A. Anderson, Renville		1.00
No. 72	T. E. Perkins, Red Wing		4.80
No. 108	" "		1.00
No. 54	" "		4.93
No. 1-A	" "		1.00
No. 74	" "		1.00
No. 32	" "		1.00
	J. A. Howard, Hammond		1.00
	" "		1.00
	" "		1.00
	" "		1.00
Keep-till-June	Mrs. M. A. Knowles, Excelsior		1.00

WYMAN ELLIOT,
CLARENCE WEDGE,
N. E. HANSEN, Judges.

GRAPES.

Empire State	Gust Johnson, Excelsior	First	.75
Eldorado	" "	First	.75
Aminia	" "	First	.75
Campbell's Early	" "	First	.75
Duchess	" "	First	.75
Iona	" "	First	.75
Agawam	" "	First	.75
Lindley	" "	First	.75
Massasoit	" "	First	.75
Wilder	" "	First	.75
Herbert	" "	First	.75

J. W. MURRAY, Judge.

NUTS.

Black walnuts	John R. Cummins, Eden Prairie	First	.50
Shellbark hickory	" "	First	.50
Butternuts	" "	Third	.30
Butternuts	D. T. Wheaton, Morris	First	.50
Walnuts	V. A. Neil, Mound	Third	.30
Butternuts	" "	Second	.40
Black walnuts	W. L. Parker, Farmington	Second	.40
Black walnuts	H. H. S. Rowell, Minneapolis	Fourth	.20

R. A. SCHUTZ, Judge.

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Officers, 1908, Minnesota State Horticultural Society.

PRESIDENT.

Prof. Samuel B. Green.....St. Anthony Park

VICE-PRESIDENTS.

First Congressional District, S. H. Drum.....Waseca
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Third Congressional District, C. H. Andrews.....Faribault
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Ninth Congressional District, Prof. Wm. Robertson.....Crookston

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Geo. W. Strand.....Taylors Falls

EXECUTIVE BOARD.

(The president and secretary are members ex-officio.)

Wyman Elliot (Chairman), 2 years.....Minneapolis
Thos. E. Cashman, 2 years.....Owatonna
John P. Andrews, 3 years.....Faribault
Lycurgus R. Moyer, 3 years.....Montevideo
Clarence Wedge, 1 year.....Albert Lea
J. M. Underwood, 1 year.....Lake City

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SUPERINTENDENTS OF TRIAL STATIONS, 1907.

Prof. S. B. Green (State Experiment Station).....St. Anthony Park
T. E. Cashman.....Owatonna
Dewain Cook.....Jeffers
A. B. Lyman.....Excelsior
F. I. Harris.....La Crescent
L. R Moyer.....Montevideo
Mrs. Jennie Stager.....Sauk Rapids
J. S. Parks.....Amboy
F. J. Cowles.....West Concord
F. B. McLeran.....Wrenshall
A. H. Reed.....Glencoe

STANDING COMMITTEES FOR 1908.

FRUIT LIST.

J. P. Andrews.....Faribault
J. A. Howard.....Hammond
Thos. E. Cashman.....Owatonna

SEEDLING FRUITS.

Dewain Cook.....Jeffers
Wyman Elliot.....Minneapolis
J. M. Underwood.....Lake City
Prof. S. B. Green.....St. Anthony Park

ORNAMENTAL LIST.

F. H. Nutter.....Minneapolis
Mrs. D. W. C. Ruff.....St. Paul
Frank Brown.....Paynesville

NOMENCLATURE.

Prof. N. E. Hansen.....Brookings, S. D.
Clarence Wedge.....Albert Lea
G. W. Strand.....Taylors Falls

PUBLICATION.

Prof. S. B. Green.....St. Anthony Park
Wyman Elliot.....Minneapolis
A. W. Latham.....Minneapolis

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Fruits for Minnesota Planting.

List adopted by the Minnesota State Horticultural Society, Dec. 5, 1907.
For the Guidance of Planters in Minnesota.

APPLES.

Of the first degree of hardiness: Duchess, Hibernal, Charlamoff, Patten's Greening, Okabena.

Of the second degree of hardiness: Wealthy, Tetofsky, Malinda, Peerless, Anisim.

Most profitable varieties for commercial planting in Minnesota: Wealthy, Duchess, Patten's Greening, Okabena, Anisim.

Varieties for trial: Salome, Eastman, Yellow Sweet, Brett, Milwaukee, University, Newell's, Lowland Raspberry, Iowa Beauty, Jewell's Winter, Gilbert.

Valuable in some locations: Wolf River, McMahon, Yellow Transparent, Longfield, Northwestern Greening.

CRABS AND HYBRIDS.

For general cultivation: Florence, Whitney, Early Strawberry, Minnesota, Sweet Russet, Virginia, Transcendent.

Varieties for trial: Lyman's Prolific, Faribault, Shields.

PLUMS.

For general cultivation: DeSoto, Surprise, Forest Garden, Wolf (freestone), Wyant, Stoddard.

Most promising for trial: New Ulm, Brittlewood, Compass Cherry, Terry.

GRAPES.

First degree of hardiness: Beta, Janesville.

Second degree of hardiness: Moore's Early, Brighton, Delaware, Worden, Agawam, Concord, Moore's Diamond.

RASPBERRIES.

Red varieties: King, Turner, Marlborough, Miller, Brandywine, Loudon.

Black and purple varieties: Palmer, Nemaha, Gregg, Older, Columbian, Kansas.

BLACKBERRIES.

Ancient Briton, Snyder.

CURRANTS.

Red Dutch, White Grape, Victoria, Long Bunch Holland, North Star, Pomona, Red Cross, Perfection, London Market.

GOOSEBERRIES.

Houghton, Downing, Champion, Pearl.

STRAWBERRIES.

Perfect varieties: Bederwood, Enhance, Lovett, Splendid, Glen Mary, Clyde, Senator Dunlap.

Imperfect varieties: Crescent, Warfield, Haverland.

NATIVE FRUITS.

Valuable for trial: Dwarf Juneberry, Sand Cherry, Buffalo Berry, High Bush Cranberry.

Mr. Wyman Elliot: There are several other varieties that those who have grown them and used them think ought to be put on the list, but they have not been disseminated and propagated enough so we can get the stock, and they cannot be put on the list. However, there is one instance that is an exception, and that is in the case of the Evelyn. This tree is a seedling of the Wealthy, and this year it bore fifteen bushels of apples. It has been sent out by Mr. Lyman as a root-grafted tree and distributed very thoroughly by one of our largest nurseries for propagation, and several other concerns have propagated it, and I do not know why we should not put it on the list. I therefore move it be placed on the list.

Captain A. H. Reed: I notice the list has very few varieties for trial, and I think we ought to have such varieties for trial as the Jonathan, which is one of the best apples that grows, and next to that is the Grimes Golden, which also is not down. I should regard such varieties as worthy of propagation, and I want to move an amendment to the effect that they be put on the list for trial.

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Mr. J. B. Andrews: There were several new things that Mr. Elliot spoke of. If we could make a list to be tried by a nurseryman it would be different. We thought they should have a year or two more before they were put on the trial list.

The President: You mean to apply that specifically to the Evelyn?

Mr. Andrews: No, we were not aware that there could be any root-grafted tree obtained of the Evelyn, nothing except scions from the old tree.

Mr. Wyman Elliot: They have it in the nursery, and the stock is available in that way.

Mr. Andrews: There are a number of trees that have done first rate as seedlings, but they have not panned out when put out as root-grafted trees. They did very well top-grafted.

Mr. Elliot: The Evelyn is doing very well as a top-worked tree; it is very successful. If we have to wait until it comes into bearing by root-grafting, some of us will not be here, and I think it would be better to use some of the promising varieties while we are here on earth. I am thinking now of Captain Reed's motion which was that we should propagate some of these varieties that we know are too tender here in Minnesota unless they are top-worked on hardy stock. We should have a list of that kind, and if we did have such a list Captain Reed's motion would be perfectly proper.

Prof. N. E. Hansen (South Dakota): I think the list is long enough, and if we go on putting apples on the list for trial, we are going to have a long list. I am one of those fellows that like to try every apple that looks like an apple, and if it is not on the list I will try it anyway just to convince the committee that they do not know it all.

Mr. Thomas E. Cashman: There is no doubt but that the Evelyn is a beautiful apple and will make a good commercial apple if the tree will stand the test. It has been stated here that the Evelyn has not been produced as a root-grafted tree. It has been doing well on the originator's grounds, and so did the Lyman Prolific, which was put on the trial list and does well in some localities but is worthless in our part of the country. The same with the Yahnke. It is a good eating apple and a good commercial apple, but it is no good as a tree in our part of the country. I think we should go a little slow in these matters. Let us get them disseminated and try them, and we will soon be able to tell whether they have any merit.

Mr. J. P. Andrews: A year ago we had on the list for most profitable variety for commercial planting the Northwestern Greening; today I think there are very few who would think it should be on that list. It is better to go a litle slow than to have to back up.

Mr. P. Clausen: I say let the people try an apple themselves. I sent down east and bought some trees to experiment with the scions. It looked as though we could get better results that way than any other.

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Annual Report, Executive Board, 1907.

WYMAN ELLIOT, CHAIRMAN, MINNEAPOLIS.

The executive board has had four meetings during the past year. Dec. 12th, 1906, appropriating $200 to defray expense of the seedling investigations by the vice-presidents. It is hoped much valuable information may be obtained concerning the seedling fruits and plants that are being grown in our state.

Dec. 7th, at Dayton's Restaurant, we had a very enjoyable meeting. The secretary's salary was raised $300 per annum by unanimous consent, and we all think he is justly entitled to it for the most excellent services he is rendering. We decided to add $200 to the $500 now being offered for premiums on seedling apples, to be paid $100 in 1917 and $100 in 1918. The president, secretary and chairman of the executive board were denominated the "local board" for business requiring immediate consideration, to fill vacancies in the office of vice-president, and appoint the usual annual committees. The treasurer's bond was fixed at $4,000, the secretary's bond at $2,000. The salaries of president and treasurer were fixed at $25 per year each.

July 7th, on account of the vacancy caused in the executive committee by the death of our much esteemed and beloved co-laborer, Mr. Frank Yahnke, by unanimous vote, Hon. Thos. E. Cashman was appointed a member of the executive board in his place.

The account of the secretary for receipts and disbursements of his office from Nov. 27, 1906, to June 25th, 1907, was audited and approved and an order drawn on the treasurer for the amount of the disbursements, $2,072.11, the secretary to deposit with the treasurer the same amount of receipts, leaving in his hands a balance of $684.71.

The majority of the executive board examined the land proposed for a fruit-breeding farm, viz., eighty-five acres owned by David Fink and lying southerly of and adjoining to the Zumbra station on the Minneapolis & St. Louis Road, in Carver county, Minn., and twenty acres directly across the road west of this farm, opposite the dwelling house; also ten acres located east of the part of said farm on which the house stands and adjoining thereto, comprising in all 115 acres. I have been informed that the president's address and the secretary's report contain considerable information concerning the new seedling fruit-breeding farm, and it is not necessary for me to make any extended remarks upon that subject. But there is one thing connected with this work which I desire very much to impress upon the mind of every citizen in our state. Whether they are members of the Minne-

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sota Horticultural Society or not, it is a duty they owe to posterity, and they should consider it a great privilege, to aid and assist by soliciting from their neighbors or friends scions and buds of apples, plums, etc., also cuttings and layers of small fruits or other seedling plants that have valuable qualities, worthy of sending to this experiment station for trial, where comparative tests may be made alongside other valuable named varieties and seedlings. Every one can feel perfectly safe as far as propagation and distribution is concerned that no portion of the plant will be given away or sold to any one without first receiving verbal or written permission from the originator or owner of the original seedling.

Secretary's Annual Report, 1907.

A. W. LATHAM, SECRETARY.

The society year just closing has been one of satisfactory achievement on the part of this society, which I have had the honor of serving as secretary now for sixteen full years. Even as the season has been a satisfactory one to the horticulturists of the state, the nurserymen, the fruit growers, the florists, the vegetable gardeners—and those of lesser interest in the art, yet whose knowledge and practice of it have brought them joy and often relief from the harrowing cares of life—even so it has been one of wholesome results along all the lines of work which the society touches. Through the annual report of the society, through the large issue of its monthly, through the direct and indirect influence of its extensive membership, through the work of the horticultural lecturers in the farmers' institutes, through contact with the intelligent agents of over fifty state nurseries, in all these and in manifold other ways horticultural knowledge is being spread abroad throughout our community, and the success which follows the practice of a sane horticulture is bringing good results to our people.

The membership this year shows, as it should, the usual increase over the previous year, the annual roll of 1907 at this time footing up to 2,239, being 212 more than in 1906. There has been a larger percentage of increase in the life roll, that of 1906 being 157, the life roll at the present standing at 185. The two rolls together aggregate 2,424, a very satisfactory starting point for the usual increase the coming year, which we shall readily achieve with the loyal assistance hitherto given by the membership, which can be assuredly counted on.

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Four names of life members have been added during the past year to the roll of those who have finished their life work here, namely, Frank Yahnke, H. G. Westman, Mrs. C. O. Van Cleve and David Secor. If there are other names to add to this list they have not yet come to the knowledge of the secretary.

A most important feature of the work of the society this year has been the passage of the legislation needed to enable the Board of Regents to purchase a fruit breeding farm, to be operated through the horticultural department of the state experiment station, with an advisory connection with the horticultural society. The progress of securing this legislation was noted from time to time in the Secretary's Corner of our monthly, so that it is familiar to you. We are proud that our record can show that of all the legislation secured by the Horticultural Society in the past fifteen years there has not been a single vote of either house of the state legislature recorded against us. Who has a better record than this? We came pretty near not being able to say this, however, last winter, as one member of the house voted against the "fruit breeding" bill, but we soon had him cornered in the lobby and showed him the error of his ways, and he immediately thereafter arose in the house and asked to have his vote changed, as he didn't want to be recorded as the only member against that measure, to which he had no objection. The secretary mentions this legislation particularly as being a part of the work that fell to his lot to take a hand in. A result of equal importance, achieved largely through the efforts of our worthy president, was the establishment of a Demonstration School of Forestry in Itasca State Park, also secured at the last session of the legislature.

There has been no increase the current year of the issue of our publications. During the year passed there were printed 2,700 copies of our monthly magazine and 2,600 reports for 1907 will be bound up for use the coming year. We were unfortunate in having lost by a fire at the state printer's about 200 copies of the report of 1906, so that many of our members who were entitled to this volume failed to secure a copy.

The work of the Farmers' Institute, with which the secretary is in close touch at every appointment, continued successfully through the season. Mr. R. A. Schutz, who served acceptably the previous winter, was with the corps again the past year and gave excellent service both on the platform and as a worker for the Horticultural Society, sending in to our roll in all 420 members. Mr. A. Brackett,

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of Excelsior, took the place occupied for several years by our lamented friend and brother, Mr. Frank Yahnke. His service was an acceptable one, and the society profited by it directly by the addition of 225 names to its membership roll.

Two new auxiliary societies were added to our list during the year, namely, the Minnesota State Bee-Keepers' Society, 40 members, and the Minnesota Rose Society, 47 members. The North Dakota Society has continued on the roll as heretofore, with 27 members, and will probably do so indefinitely until the legislature of that state shall see fit to give them a suitable appropriation for publishing their own report. We gave similar assistance to the South Dakota Society until they were able to go alone, and they are now issuing a most excellent report and operating a most successful society under the skillful management of our mutual friend, Prof. N. E. Hansen, as secretary. Other auxiliary societies connected with the society this year and their membership are as follows: South Minnesota, 63 members; McLeod Co., 11 members; Rock Co., 17 members; Kandiyohi Co., 37 members; Red River Valley, 9 members.

There have been 3 entries made during the year for the $1,000 prize offered by this society for the kind of a winter apple that we think the people of the state are entitled to and must eventually have. So far none of these entries appear to attain the high standard required by the conditions, but this is no reason for discouragement. There is no expense attending the entry, and we hope as apples develop and give promise there may be further entries in this class until some one carries off the prize. One entry only has been made under the $100 prize for a seedling plum offered by Mr. Chas. F. Loring. This was a most excellent fruit coming up very closely to the requirements. It originated in Sioux Falls, S. D., and the entry was made by Mrs. F. E. Phillips of that place. The number of entries for the $100 prizes to be paid annually for a number of years commencing 1912 has materially increased the past year so that there are now in all 271 entries for these prizes. As these entries can be made by anyone that planted apple seed last spring, or may plant from now on, by conforming to certain conditions, information as to which may be learned from the secretary, it is hoped that a large number may avail themselves of this opportunity to become interested in the growing of seedling fruits, to which source we must look for varieties well adapted to our peculiar conditions.

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Coming to the record of the changes in the secretary's office during the year, they have been of a practical character, consisting, first, in the finishing of the card indexes, the work upon which had been going on for two or three years. There is now a complete card index of the library, another of practically all the bulletins on horticultural subjects which have been published by the various experiment stations of the country, and another of all the articles and the names of their writers which have been published in the reports of this society from the very beginning. This last named index proves to be of the largest use in the office, as by it we can learn in a moment what articles have been printed on any particular subject and also can find grouped together all the papers, reports, etc., written by each member of the society. In a general way any information now desired as to the contents of the society reports can be had with promptness by application to the secretary.

There has been the usual increase in the library this year, requiring the purchase of a number of additional cases. The increase, of course, is mainly reports of other societies, but a number of valuable reference books have also been added. A list of all these additions will be found in the back part of the annual report for 1907. The increased work in the office has made it necessary to purchase a mimeograph, and other lesser facilities for doing the work have been added from time to time as needs have developed.

The finances of the society are in a most satisfactory condition, as will be seen by consulting the following table.

SECRETARY'S FINANCIAL STATEMENT FOR 1907.

RECEIPTS.

Balance on hand	$270.78
Advertisements	331.83
Life membership fees	236.00
Annual fees, 1906	10.00
Annual fees, 1907	2,065.00
Annual fees, 1908	169.00
Annual fees, 1909	1.00
Books sold	19.35
Western Pass. Ass'n	14.00
Interest, Security Bank, from Treas. Strand	36.70
Minnesota State Fair	20.00
Sundries	7.70
Total	$3,181.36

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EXPENDITURES.

Postage	$523.38
Express	20.20
Printing	169.39
Telephone	35.80
Gas	4.24
Assistance in office	325.30
Assistant librarian	10.00
Library	13.92
Fitting room for reports at experiment station	30.47
Premium books	236.80
Premium plants	4.96
Insurance	8.00
Office rent	240.00
Expenses Mr. Yahnke's funeral	10.10
Reporting annual meeting, 1906	157.80
Expenses annual meeting, 1906	310.83
Expenses summer meeting, 1907	29.32
Expenses annual meeting, 1907	12.12
Expenses seedling committee	7.70
Expenses Forestry Association	11.68
Expenses executive board	21.69
Expenses delegates	49.07
Office supplies	63.43
President's salary, 1907	25.00
Webb fund	10.55
Discounts on memberships	223.75
Badge buttons	4.00
Book protectors	12.25
Officers' bonds	21.00
Visiting Wisconsin orchards	29.49
Examining society books	5.00
Balance on hand	554.12
Total	$3,181.36

GENERAL STATEMENT.

Deposited in Hennepin County Bank	$1,337.68
Interest to October 1, 1907	45.70
Total	$1,383.38
Balance in society treasury	$3,130.59
Balance in hands of secretary	554.12
Total society funds	$5,068.09
Gideon memorial fund in Hen. Co. Savings Bank, Dec. 3, '06.	$260.70
Contributions in 1907	6.00
Interest to October 1, 1907	8.94
Total	$275.64

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Treasurer's Annual Report, 1907.

GEO. W. STRAND, TAYLORS FALLS.

RECEIPTS.

1906.		
Dec. 3.	To balance	$2,587.92
1907.		
Jan. 7.	A. W. Latham, receipts of secretary's office from June 25, 1906, to Dec. 3, 1906	496.49
Feb. 16.	State treasury, semi-annual allowance	1,250.00
July 2.	A. W. Latham, receipts of secretary's office	2,072.11
Aug. 12.	State treasury, semi-annual allowance	1,250.00
		$7,656.52

EXPENDITURES.

1907.		
Jan. 7.	Order 155, A. W. Latham, exp. of secretary's office, June 25, 1906, to Dec. 3, 1906	$496.49
Jan. 24.	Order 156, A. B. Lyman, treasurer's salary	25.00
Jan. 25.	Order 154, Clarence Wedge, president's salary	25.00
Mar. 4.	Order 157, First Unitarian Church, rental	75.00
Mar. 5.	Order 158, A. W. Latham, salary, first quarter	375.00
June 1.	Order 159, A. W. Latham, salary, second quarter	375.00
July 1.	Order 160, A. W. Latham, exp. secretary's office, Dec. 3, 1906, to June 25, 1907	2,072.11
Sept. 2.	Order 161, A. W. Latham, salary 3d quarter	375.00
Nov. 29.	Order 162, A. W. Latham, salary 4th quarter	375.00
	Order 163, Premiums annual meeting, 1906	228.33
	Order 164, Premiums summer meeting, 1907	104.00
	Balance	3,130.59
		$7,656.52

Some fruit growers say that potash is the paint that nature uses to make her colors. Whether this is true or not there is no doubt that we can materially add to the marketable value of our fruits by supplying available potash to the soil in very many cases. An application of 200 pounds per acre of either muriate or sulphate of potash is almost sure to help any orchard or other fruit plantation.—H. E. Van Deman.

There is hope for orchardists in the lady bug. When the department of agriculture imported the Japanese lady bug a few years ago, there were serious doubts as to the practical value of the introduction. The lady bug preys upon the San Jose scale, and for this purpose it was brought into the country in the hope that eventually it may keep the scale in subjection. From the very start it had promise. It multiplied rapidly, and became the deadly enemy of the much dreaded scale. It came through the cold weather in southern Michigan in good shape, and it now appears it will survive almost any climate where fruit can be produced. If this is finally established, the value to the fruit interests may be beyond estimating.

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My Plum Orchard of Two Thousand Trees.

MAJ. JAMES ELWIN, RICHFIELD.

I would like to have it specifically understood that I am only an amateur plum grower, and my knowledge of plum growing and the success I have made in plum growing has been through the instructions from others who understand the subject better than I do—and, in fact, the setting out of the orchard and the selection of varieties was all done by a horticulturist of the city who advised me as to what varieties I should set out, how to plant them and how to take care of them after they had been planted, and I can only give you the little experience I had in connection with my orchard.

Some seventeen years ago I purchased out in Richfield ten acres, with buildings, etc., thinking at some time I would retire to country life. I rented it out to tenant after tenant for garden purposes, but they all said, "too sandy, I can't make it pay."

Now, when I purchased the place, there was growing on the south and east sides of the house about twenty-five native Minnesota plums. These my various tenants told me—I also saw for myself—bore and yielded good fruit, neglected and misused as they were, never sprayed or cared for in any way. There, it was suggested by an horticulturist, is the place of all places for a large orchard of plums; if a few trees would do so well, that soil is right for all I could plant.

On the 10th of April, 1902, we plowed the ground deep and harrowed it well both ways, then staking it out for the trees thirteen feet apart, thus to have twenty-five trees in a row. We then had the holes dug thirty inches deep, and when the subsoil was of sand (as it was in a number of cases) had it thrown on another side of the hole, so as not to use that in the planting of the trees.

After unpacking the trees, we trimmed the tops and roots with a sharp pruning knife—the roots more particularly, cutting each root diagonally in order to have as much surface as possible on each root, thus allowing the small fibers to start on new wood, making or starting a healthy growth. I then dug a pit about four feet deep, four feet wide and six feet long, and put in a small load of clay, filling it up with water. Then stirring up so as to make a clay mud, I would put fifty trees in the pit roots down, so as to thoroughly cover every part of the roots with the clay mud before planting.

We started to plant April 18, 1902. The varieties selected were Surprise, Hawkeye, Rollingstone, De Soto and Weaver. Taking 100

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of one variety, thus making four rows of twenty-five each, then 100 of another variety, and so on until the whole orchard was planted.

In planting the trees one person would hold the tree in place, six inches below the graft, and two would shovel the top soil around the tree and jump it down, so as to pack the soil in solid, leaving a basin around each tree. The three working together in this way planted fifty trees in thirty-five minutes. Before completing planting the orchard, I found that I was forty trees short in filling out the last

Maj. Jas. Elwin, Richfield, Minn.

100. I asked the horticulturist who superintended the planting if he could get forty trees to fill out this 100, and he said he could. When he brought them out I saw they were a small, stocky tree and looked more like a currant bush. He said, "I feel ashamed to bring such trees to you," and I thought perhaps best not to plant them. But as the trees looked healthy, I consented to have them planted, and to our surprise we found these little fellows grew more rapidly than any other trees on the place and turned out the finest stock and bore well. So I would recommend to plant young, stocky trees.

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During planting the weather was fine, so that the soil around each tree was dry. After completing planting we had two days of continual raining, and every tree we planted that year lived.

In order to utilize the space between the trees I marked out both ways for corn four feet four inches apart—so as to have the tree represent a hill of corn—and planted the same. Cultivating the corn cultivated the trees at the same time. This I repeated three consecutive years, securing a good crop of corn as well as benefiting the trees.

The second year, about July 1st, we had a severe wind storm. I went out in the orchard the next morning and found nearly all of the trees were bent to the ground, being so top heavy with foliage. We straightened them up and commenced cutting them back. We trimmed every tree in the orchard severely, which temporarily disfigured them and threw the trees back a year from bearing, but it made them stronger and more vigorous.

The spring of 1906 was the first year I sprayed. I sprayed, before the trees were in blossom, with Bordeaux and Paris green, and commenced to spray the second time after the fruit had formed. Having only a knapsack sprayer it was slow work, and I could not finish the orchard. The result was that all the trees that were sprayed twice had fine, perfect fruit, and on those that were sprayed only once the fruit was defective. A number of the trees I sprayed twice yielded two sixteen-quart crates of elegant fruit.

Last winter I bought a straw stack, in order that I might mulch the trees to keep them back in the spring in case a late frost might come after blossoming. I only mulched about one-half and mulched them in February when ground was frozen. As the season was very backward I could not tell if it held them back or not, but I do know that on those that were mulched the fruit was better and more of it, owing to the mulch retaining the moisture around the trees. On those that were not mulched the fruit in a number of cases wilted and dried up before ripening.

This year I purchased a barrel sprayer, which made the spraying easy. One person would drive and pump, and two would spray. By this means we could spray 200 trees an hour. I sprayed twice this year, using Bordeaux and arsenate of lead, and the result was I had a good crop, some trees yielding two sixteen-quart crates, netting me $3.50 a tree.

This first three years the black aphis was very prevalent on the trees, especially on the De Soto. This summer after the sceond spray-

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ing I noticed nearly all of the new shoots were covered with this pest, and thought perhaps spraying had not helped it, but in a few days to my surprise I found them all gone and concluded the insects, working down to the part that was sprayed, were destroyed.

In conclusion, I wish to impress on the minds of those raising plums, never to sell them in bushel baskets. For one reason they lie too heavily together, and if one plum gets wet it affects so many around it, and in a very little while the bulk of the bushel is unsalable. Crates can be purchased cheaply, and you can always get enough better price for the plums to pay for the crates, and at the same time it makes them more marketable, and the merchants are better pleased with them.

Mr. E. A. Smith: In picking your plums, do you pick them in quart boxes.

Major Elwin: Yes, in sixteen quart crates.

Mr. Smith: Did you every try picking them into crates after dividing the crates in two?

Major Elwin: I think that would give the same result as packing them in bushel baskets, they would lie too close together. You will notice when they are put in bushel baskets that you will find a portion of them wet, and in lying together they will start to rot. Therefore, I do not believe in putting them in bushel baskets or in any large package.

Mr. George J. Kellogg: What variety pays best?

Major Elwin: Last year the Surprise paid me best, but this year the Hawkeye paid best. Last year I had a very large crop of Rollingstone, in fact the Rollingstone was so heavily loaded that I could strip a quart off by going over them twice with my hands in this manner (indicating). This year the Rollingstone bore a very small crop compared with last year, but the crop of Hawkeye was especially large, and I noticed the trees were so heavily loaded that I was anxious to get at the trees as soon as they showed the slightest indication of ripening so as to lessen the amount of fruit on the trees. I would pick a crate off a tree, and in two days the plums remaining would seem to have grown to twice the size they were at the time I picked the first ones. You would hardly believe the difference it made.

Mr. G. A. Anderson: Is not the quart box too small a package to market plums in?

Major Elwin: I do not find it so; if I had had five times as many I could have sold them all. My load was always sold before I got to market. I speak from experience, and I know the people are satisfied with them in quart boxes. I fill them up good, and there are a great many plums in a sixteen quart crate. My wife made fifty glasses of jelly out of a crate and, I think, two or three boxes over, and she thinks there is no plum growing that makes as nice jelly as the De Soto. I think the one that catches the eye is the best seller; you have to catch the eye of the American people, and I think the plum that does that is the Surprise. It is a very showy plum, and if people

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see that plum among other varieties they want that because it shows off well. I do not know that the Surprise is really a better plum, but it is a more showy plum than the De Soto or the Hawkeye.

Mr. C. F. Gardner: It feels very nicely.

Major Elwin: Yes, it feels just like a peach, but if you wait until they get ripe you cannot get them to town.

Mr. M. L. Gjestrum: What price do you get for a sixteen quart crate?

Major Elwin: This year I got two dollars, less the commission.

Mr. E. A. Smith: How do you market your plums, direct to the consumer or through a commission house?

Major Elwin: They are generally all sold before they are ripe. People see my fruit and make a bid on it, and if I think the bid is all right I accept it. I have done that in two cases.

Mr. E. B. Miller: This year was a bad year for plums and the price was especially high. I saw sixteen quart crates sell for two dollars, that is at the rate of four dollars a bushel.

Major Elwin: I have never had any one complain of the size of my crate. I instructed my pickers to fill the boxes up as full as they would hold. I have had people say they could make two crates out of one of mine. Of course that is an exaggeration, but I have the boxes filled full.

Annual Meeting, 1907, Iowa State Horticultural Society

CLARENCE WEDGE, ALBERT LEA, DELEGATE.

The writer had long desired to meet the giants of Iowa horticulture on their own ground and enjoy the wit and wisdom of our southern brethren in their own house. His opportunity came at last through the misfortune of the accredited delegate, Mr. A. B. Lyman, in being detained at home by sickness in his family, and our appointment as a substitute.

The Iowa society is fortunate in having a recognized home in the capitol building, in a beautiful room which amply accommodates its library and chairs for seventy-five, the maximum attendance at its meetings. The room is richly finished in Iowa black walnut, with panels of catalpa grown from seed planted by the late Suel Foster, one of the horticultural pioneers of Iowa.

Although your delegate did not arrive till the second day of the meeting he was fortunate in being able to listen to one of the best numbers left over from the preceding day: "The Initial Start," by W. M. Bomberger, of Harlan, from which we noted some fresh thoughts. "In an orchard varieties should be treated as individuals," giving special treatment to special needs. As an instance: Rules for trim-

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ming applying to one variety may be of little use for another of different habit. Additional fertility is greatly needed after the apple has borne a few crops. This is especially true in soils deficient in humus, such as that usually found in rolling land. In setting trees in an orchard it is frequently desirable to dig large holes and give the trees a mixture of soils, such as would result from mixing some of the mineral soils from rolling land when setting in the lower black loams, or the opposite when setting in the mineral soils of higher land. That such a mixture is advantageous is proved by the fact that the best trees are generally found at the outlet of gulleys, where nature has made such a mixture. Mr. Bomberger is a believer in making the most thorough preparation of the soil at the start and suggested the following compost as being valuable to mix with the subsoil under the tree before setting. Pasture sod, two-thirds; cow manure, one-third; bone meal, a sprinkling; wood ashes, a sprinkling; to be well mixed and well rotted before using.

Mr. K. A. Kirkpatrick, of South English, read an unusually suggestive paper on "Ornamental Shrubs for the Home Grounds." He said that a person who left his home bare and bleak and unornamented while he is engaged in making his living cannot hope to repair his loss and that of his family in after years. What is invested in buildings begins at once to decay and lose value; what is put into trees begins at once to improve and increase the value of the surroundings as the years pass by. The greatest need of the city home of today is more planting to relieve the bare, bleak stone and brick walls. Plant shrubbery in groups and masses, and avoid the checkerboard planting that makes the front yard a shrubbery museum. Avoid also the extreme of overshading the home, "Sunshine is our cheapest beautifier. Let the house and lawn have a large share of it."

J .C. Ferris, of Hampton, deplored the destruction of our forests. "Even the Russian czar, the tyrant of the North, protects his forests, while Uncle San has allowed the corporations to rob his people of their fairest and most needed inheritance." Let the forest reserves be increased and all wood be admitted free of duty.

G. D. Black, Independence, attributed the unusual mortality in our feathered friends last spring to the cold, late season, which retarded the development of insects, the chief food of most species. They practically starved to death. By devouring the "early worm" they diminish our most destructive enemies at the beginning of summer, when otherwise these would multiply to uncontrollable numbers.

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F. P. Spencer, Randolph, stated that a freeze destroyed most of the fruit in the southwest corner of Iowa. The early set apples were not injured, showing that fruit will stand more cold than blossoms. In his section altitude determined the crop. It seemed to be the general opinion that foliage is seldom injured by an excess of bordeaux, but a larger percent of lime is becoming popular. Blue vitriol in crystals is of constant purity and not subject to adulteration. The apple growers' association of Illinois buy their blue vitriol by the car lot and distribute it at a cost of about $7.60 per 100 lbs. at the consumers' station.

Your delegate finds it altogether outside the limits of his report to incorporate more than a fraction of the interesting notes taken at the meeting. His appointment on the committee of conference with the Iowa and Wisconsin Society to arrange for the assistance of Mr. Patten in carrying on his experiments, made the accomplishment of this matter one of the objects of his visit. It is pleasant to report that the Iowa society seems to be cordially with us in appreciating the importance of Mr. Patten's work. We were unable to discover any opposition or jealousy. The appointees of that society to carry out the idea conceived at our meeting were as follows:

C. L. Watrous, Des Moines; Eugene Secor, Forest City; C. F. Gardner, Osage. Further report in this matter may be expected from our chairman after the Wisconsin society have appointed their committee, and a joint session has been held.

In the afternoon of the second day the Park and Forestry Association occupied the hall with a program similar to that of our Forestry auxiliary society. At the close of this session the Plant Breeders held a meeting in which, without any special program, they completed their organization by adopting a constitution and electing officers as follows: President, C. G. Patten, Charles City; vice-president, Prof. S. A. Beach, Ames; Secretary, Prof. A. T. Irwin, Ames.

The newly elected officers of the Iowa Society are: President, W. M. Bomberger, Harlan; vice-president, Wm. Langham, Cedar Rapids; secretary, Wesley Greene, Davenport; treasurer, Elmer Reeves, Waverly.

A PROFITABLE WEALTHY TREE.—Mr. J. W. Patten, of Long Lake, writes in this interesting way about a Wealthy tree upon his place.

"The Wealthy referred to stands about three rods from the house. It is twenty-seven years old. It has not been cultivated or fertilized except from a piggery near by. For years it has borne a good crop, first on one side and then on the other, but this year it had apples all over, although there were more on the south side. The apples are large but do not color as red as some others we have. The tree measures fifty-three inches just above the ground. This year we gathered eighteen bushels of apples, and the chickens spoiled a good many more."

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Annual Meeting, 1907, N. E. Iowa Horticultural Society.

H. J. BALDWIN, NORTHFIELD, DELEGATE.

Your delegate asks leave to thank the Minnesota society for sending him on so pleasant an errand among such a fine set of horticulturists. It is a small organization, but evidently doing a good work. As in all our gatherings, the apple was given the largest share of the time on the program and in the discussions.

The districts reports were all favorable for apples, many of the towns sending out from ten to fifteen cars of apples to the south and west. The varieties commonly grown in southern Minnesota are those grown here.

Berries were a light crop excepting blackberries, which were a heavy crop; no cherries, and but a few grapes.

There was a remarkable display of carnations and chrysanthemums from the State Insane Hospital. The display of fruits gave credit to the society.

Two methods of orchard care were recommended: pigs to pick up windfalls and manuring every year and not too near the trees. Spraying was well discussed and recommended to all to be done thoroughly. The idea of employing a man thoroughly informed and supplied with a powerful sprayer to go round from place to place and do the work for others was discussed and seemed advisable. Their program was too long for a small society; papers ought to have been boiled down in some cases. Their plan now is to have only two days and cut out all entertainments.

A SUCCESSFUL TRANSCENDENT ORCHARD—is one of 200 trees near Stillwater which bore this year nearly 2,000 bushels of apples. The orchard is forty years old. This spring is the first time it was sprayed, using Bordeaux mixture; not a wormy apple in the orchard—so writes Mr. H. W. Irwin, Stillwater. Who has a better record?

PRACTICAL RESULTS FROM TOP-WORKING.—Mr. J. A. Howard, of Hammond, Minn., sums up in part his experience from top-working in a recent letter as follows: "I get finer specimens top-worked than I do from the original tree. I have the Hibernal and Patten top-worked on the Duchess, but it does not improve them any. The Yahnke trees set in 1900 haven't borne an apple, while the grafts of that variety set on Duchess the same year have borne for three years. It does not improve the University, Walbridge, or Northwestern Greening to top-work them, while Golden Russet, Malinda and Red Astrachan and a few others are far better."

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SECRETARY'S CORNER

DON'T FORGET YOUR NEIGHBORS.—Give away the 1907 Horticulturist and send in at least one new member in January.

APPLES IN FILLMORE COUNTY.—Mr. C. E. Snyder, of Preston, Minn., reports that about a hundred carloads of apples were shipped out of his county, Fillmore, this fall, which is a pretty good showing considering that most of the orchards furnishing this fruit are yet very young.

WISCONSIN REPORTS FOR DISTRIBUTION.—There is a limited number of 1906 reports of the Wis. State Hort. Society in this office for distribution to members who may call for them at the office or remit the postage, 14 cts., if to be sent by mail. There are reports of other societies also on hand to be had without expense by those applying for them.

DELEGATE TO SOUTH DAKOTA MEETING.—Mr. G. A. Anderson, of Renville, one of the younger members of our society, is to attend the annual gathering of the South Dakota Society as representative of this association. As that meeting convenes on January 21st, we hope to publish the report of it in the February issue. The meeting is to be held at Watertown.

PLEASANT WORDS FROM A VISITOR.—In a letter received from Mr. Brackett, since his return to Washington, (it will be remembered that he attended our annual meeting as a representative of the U. S. Department of Agriculture), he says in part "This was one of the most interesting meetings of the kind that I have ever attended, and I have attended such meetings for nearly forty years. You are to be commended on the wealth of zeal and the wonderful resourcefulness of the members of your society. The work the society is doing is valuable and will bring thousands of dollars of wealth to the great Northwest."—G. B. Brackett, Pomologist.

THE SOCIETY FOLDER FOR 1908.—The little pink folder issued yearly by the society, containing the fruit list, list of premiums offered for securing new members, list of plant premiums offered to all members, a description of the various prizes for seedlings offered by the society, and a lot of other interesting information about the organization, is now in print and ready for distribution. Nurserymen should use them through their agents freely, members of the society should secure them and hand them to their friends, the papers of the state should publish much of the information they contain, and in a general way they can be made eminently useful. The secretary is prepared to supply almost any quantity desired.

ANNUAL MEETING, SOUTHERN MINNESOTA HORTICULTURAL SOCIETY.—The Southern Minnesota Horticultural Society, of which O. M. Peterson, of Albert Lea, is secretary, will hold its annual meeting in Albert Lea, we understand, on Jan. 14 and 15, a two-days' session. An interesting program is in preparation, and a good list of premiums will be offered for the fruit exhibit in connection with the meeting. As the territory reached more directly by this auxiliary society has been especially favored in apple production this year, it is expected that a large attendance of enthusiastic orchardists will take this opportunity of getting together along these lines.

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Other subjects pertinent to horticulture will of course be considered. Any of our members finding it convenient to attend the meeting will without doubt be well repaid for the trouble.

NEW HONORARY LIFE MEMBERS.—At the late annual meeting, upon recommendation of the executive board, by the unanimous vote of the society, three new life memberships were created. One went to Mr. R. A. Schutz, who has served the society with such fidelity in the Farmers' Institute for the last few years, adding very materially to its membership roll; another to A. H. Reed, of Glencoe, one of the pioneers of Minnesota horticulture, and one of the sturdiest champions of the society, a well earned honor; and a third to Mr. T. E. Perkins, the owner of the famous Malinda seedling orchard in Red Wing, which has now attained in a sense a national reputation. Mr. Perkins is well along in years, and it is a great pleasure to the society to recognize the value of his work in this way.

TOP-WORKED APPLES AT THE WINTER MEETING.—The new premium on collections of top-worked apples offered at the late annual meeting brought out an unexpected response. Seven exhibits were made. Five of these by well known members of the soicety, and two by unknown parties, at least unknown to the writer at this time. A large collection was made by Mr. A. J. Philips of West Salem, Wis. This was not a competitive exhibit, as it was excluded by the regulations, but a special award was made to him by the committee. The first premium went to Mr. J. A. Howard of Hammond, who showed twenty-seven varieties grown by top-working. Mr. John Bisbee, of Madelia, exhibited twenty-five varieties; S. H. Kenney, of Waterville, nineteen, and Mr. P. Clausen, of Albert Lea, ten varieties. We have preserved a full list of the varieties shown, and at some future time these will be collated and in this form presented to our readers.

ANNUAL MEETING, MINNESOTA STATE AGRICULTURAL SOCIETY.—The regular annual meeting of this society, whose principal work is the operating of the Minnesota State Fair, will be held in the old Capitol Building, St. Paul, on Tuesday, Wednesday and Thursday, Jan. 14, 15 and 16, for the purpose of electing a president, two vice-presidents and two managers, etc. A program of special interest has been prepared for the first two days of the meeting, the business session being held on Thursday. The Minnesota Field Crop Breeders' Association are to furnish the program for the afternoon of the first day, and we notice at least one article on this program which touches horticulture, "Onion Culture," by Frank H. Gibbs, of St. Anthony Park, a member of this society. The full program for this meeting is not yet at hand.

The horticultural society will be represented there by three delegates, and we hope that many others of our members may have the opportunity to attend.

MEMBERSHIP ROLL FOR 1908.—At this writing, Dec. 27th, the annual membership roll stands at 642 as against 520 on the same date a year ago, a material increase which we hope to maintain in a similar proportion throughout the year. To do this, however, will require the *active co-operation* of the membership. We are entering upon what gives promise of being the best year for Minnesota horticulture yet known, and there is no reason why anyone should for a moment think of dropping out of the society, or

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ceasing any efforts to uphold and advance its interests, which are now of more importance to the state and its individual citizens than ever before. More activity in the nursery business, more trees and vines to be set out by the planters is the promise for the coming season, and everything looks exceedingly favorable for a fine fruit crop. Much ornamental stock is to be planted, and many homes made brighter and more attractive by these invaluable external embellishments. Take a hand and help on this movement, which is represented in a general way by the strength of this organization.

IMPORTANT FORESTRY RESOLUTIONS.—At a conference of the forestry boards of Michigan, Ohio, Illinois, Wisconsin and Minnesota, held in Saginaw, Mich., in November, at which Prof. S. B. Green was present as representing the Minnesota board, after setting forth in series of whereases "the importance of forest wealth," "the uplifting force of land grant colleges and experiment stations," "the fact that the income from the national forest reserves has reached the sum of one and one-half million a year" and "an apparent fitness in using a portion of this income for teaching forestry," the following strong resolution was adopted: "Resolved, That we recommend that a liberal portion of the income from the National Forest Reserves to be appropriated by congress to the several states and territories for instruction and experimentation in forestry in the agricultural colleges and experiment stations."

ECHOES FROM THE ANNUAL MEETING.—Attendants at the late meeting said things about it. Here are samples:

"You certainly had the finest convention I ever attended, and the perfect harmony prevailing was remarkable."

"You certainly had a glorious meeting."

"I enjoyed every meeting I attended."

"I enjoyed the meeting very much."

"This is without doubt the largest society in the United States, if not in the world. The attendance was the largest known."

"The meeting was the best ever held by the society."

"I derived untold benefit from the convention."

"This was a remarkable meeting, it was so earnest and attentive—so orderly. The spirit of the meeting was so good and unselfish."

"One of the most interesting of the kind I ever attended."

THE BOUND VOLUME FOR 1907.—As in previous years, there is some unavoidable delay in getting the bound volume from the printers fast enough to supply the rapidly growing membership roll for 1908. Several hundred books have already been sent out, but it will take as many more to furnish those members who are already on the roll, and as the roll is steadily growing it may be several weeks before all will be supplied. This is written for the benefit of any who may think they have been overlooked in this matter. A little patience will make all right. The book is handsomely bound, has an excellent index, and will be found a valuable addition to the library.

Do not forget, however, that in accepting this book you are under obligations to the society to give away the magazines received during the past year where they will be appreciated and incidentally help the society in the matter of memberships.

Members living in or near Minneapolis will please call at the office to secure a copy of this book, thereby saving the expense of postage and securing the book in better condition than if mailed to them.

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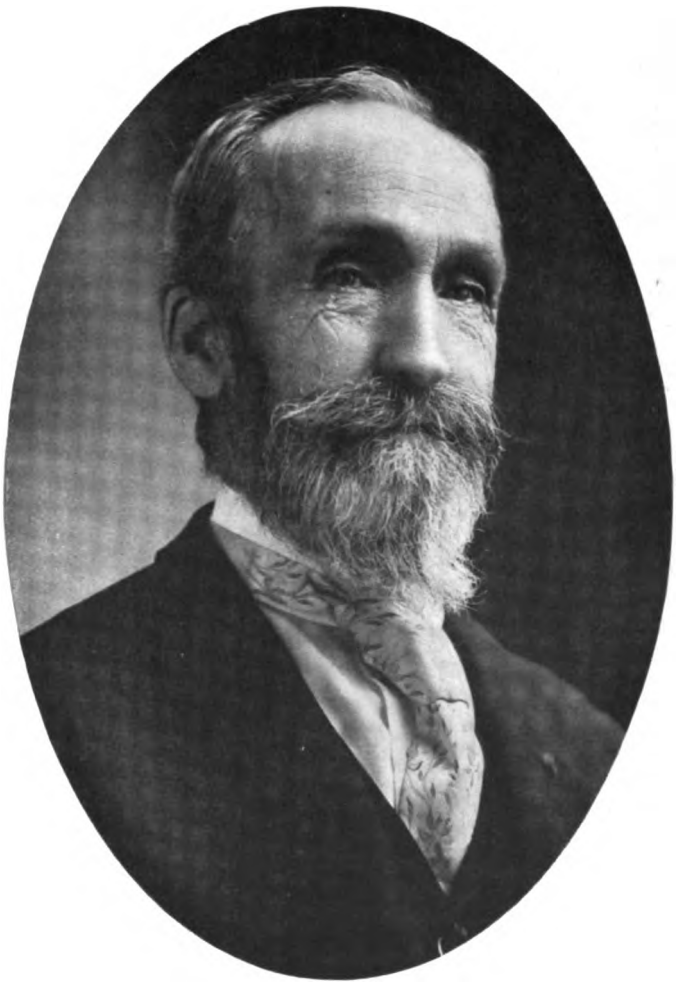

HON. GEO. B. BRACKETT,
Pomologist, U. S. Dept. of Agriculture.

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THE MINNESOTA HORTICULTURIST

Vol. 36 FEBRUARY, 1908. No. 2

Originating New Fruits.

HON. G. B. BRACKETT, POMOLOGIST, U. S. DEPT. OF AGRICULTURE.

(An address delivered at the annual meeting.)

Mr. President, Ladies and Gentlemen:

In attempting to address you on this important subject to which you have given so much time and attention, individually and collectively, for the past few years, I come to encourage you in the good work you have already begun rather than to blaze the trail for future progress in pomology. The great Northwest is just on the horizon of its possibilities in fruit culture. In 1857, when Minnesota became a state, pomology in the east had been crystalizing for nearly two hundred years, and many problems presented to the fruit grower in the east had been fairly well settled and needed less revision. But Minnesota, situated as it is, exposed to the blasts of Old Boreas, which sweep down from the north, had problems undreamed of by easy-going eastern fruit growers.

Your state is making rapid progress in the development of its fruit industry. Your society has become noted the world over for the energy it has manifested along the lines of practical work and original investigation. The secret of pomological success is the growing of varieties adapted to your climate. You have reason to be proud of your organization and honors so heroically won. In nature there is a law of balance of compensation that never fails. You have set in motion efforts for the accomplishment of a definite end, that is, the origination of hardy varieties of fruits adapted to the severe climatic conditions which surround your domain, and if persistence is maintained there can be no failure in the final results.

Probably no other organization of like nature eclipses the Minnesota State Horticultural Society in its membership and its lively interest in its work. No other society has ever offered such high premiums for the production of new fruits as this society has done.

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And your work of selecting hardy varieties from seedlings has been strengthening with the strength of the society and growing with its growth. All the progressive pomology in your state seems to center toward the production of hardy varieties of high quality—and yet *hardiness* and *quality* seem so shy of dwelling together in the same pomaceous abode.

The standard of excellence, especially of the apple, has been placed so high that but few hardy seedlings possess a sufficient number of points of value to make them worthy of consideration.

There is a commendable tendency among fruit growers not to attempt to introduce new varieties unless they possess points of superior excellence above the varieties we already have.

There is perhaps no subject of such vital importance to the fruit growers of the northwest as the originating of hardy fruits adapted to the severe climatic conditions of this region of country. The healthful competition and spirit of rivalry manifested among experimenters all over the country makes the work of originating new fruits all the more interesting and valuable. The demand for better fruits is constantly increasing. The Ben Davis apple no longer satisfies the cultivated taste. The rapid growth of public appreciation of quality demands the higher standard of a more perfect type of fruit.

No subject offers greater inducements to experimenters of the present time than the origination of new fruits. No other field of investigation promises such grand results as the production of better fruits, better in quality, better for market, for long keepers, for hardiness of tree and wider range of adaptation, immunity from disease, appearance, shipping qualities—and a better product in every way than that we now have.

There was a time when the evolution of fruits was left to the slow process of nature unaided by man. Systematic horticulture, however, has been slow in reaching its present stage of development, and many of its most valuable discoveries are due to the patient industry of some obscure searcher.

In the early days of Iowa horticulture, as far back as 1841, the pioneers without any horticultural knowledge or experience to guide them in their new and untried venture—not having once dreamed of the question of adaptation of varieties to environment—planted old varieties they brought with them or obtained as best they could from eastern states. Over 100 varieties of apples were listed in the nursery catalogues at that time, all of which were more or less planted in orchards in southeast Iowa. In that virgin soil the trees grew rapidly

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and early came into bearing, and finer fruit was never grown in any country. All went well until the winter of 1872-3 came, with its blasting effects of extreme cold weather, wiping out at one fell swoop 90 per cent of all the varieties then grown, and with it went the fondest hopes of the fruit growers.

It was not until this calamity came that orchardist and scientist began to wake up to the importance of studying the question of adaptability of varieties of fruit to environment or, in other words, hardiness. Hitherto no attention whatever had been paid to this most important subject; now it is the question paramount above all others. It is the main topic of discussion by your organization. How to devise means for originating new, hardy fruits for this cold corner of Uncle Sam's domain is the question for you to settle. It is for this purpose that you have recently established a plant-breeding farm, where you can conduct your experiments with this special object in view.

The possibilities of fruit growing in your state cannot be overestimated. Luther Burbank has eliminated the word impossible as applied to pomological evolution. Already you have begun to reap the reward of your persistent endeavors. What Gideon, Harris, Perkins and others have accomplished has only stimulated your desire to carry the work to a higher degree of success. The day is not far distant when Minnesota will not only be growing apples of the highest quality, but she will be growing peaches and other choice fruits in abundance.

In confirmation of this prediction, and as a matter of encouragement, allow me to cite you to some familiar facts in the evolution of plant life. For instance, our Indian corn was originally only a tropical grass, but by pushing it gradually northward through successive generations it has undergone wonderful changes in habit of growth and adaptation to new conditions. In the south it attains a height of from twelve to fifteen feet, while at its northern limit it is dwarfed to four or five feet—and there is also a great difference in the amount of seed produced, varying from twenty to one hundred bushels per acre, the latter amount being reached in the Connecticut Valley.

It is a matter of universal observation that for every species of plant there are certain conditions that are best suited to their well-being. It is also a well established fact that all plants, when subjected to any change of condition through successive generations, tend to vary or depart somewhat from the original type. When these changes are too violent or abrupt, one of two things must take place; the species whose environment has been so greatly disturbed must undergo such modification as to come into harmony with its new sur-

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roundings, or it must perish. The extent of the modification is limited and depends upon the energy of the disturbing force, the constitution of the plant and its environment. If the plant is subjected to a sudden or violent change, it may not be able to withstand the shock; but if the change be gradual and time be given, it may slowly accommodate itself to the new order of things.

So with the peach, which is a native of Persia. It has through a long series of years become acclimated to a much colder climate.

Taking all these things into consideration we feel warranted in making the statement that the possibilities in pomological evolution are unlimited, but "the mills of the Gods grind slow." Patience and perseverance is our watch word.

Already your sister state of Iowa is making rapid progress in the production of hardy peaches. Notwithstanding the adverse climatic conditions of the past season, peaches were grown in some sections of Iowa in sufficient quantity to supply the home demand, and in 1906 there was one town that shipped out 30 car-loads. The most of these ironclad peaches are of seedling production and selection, and many of them compare favorably with the choice named varieties. Many of them reproduce themselves from seed. In the southern part of the state we have a variety called the Sawyer peach, a large, yellow freestone of excellent quality, ripening in October, which has been propagated from seed for the past sixty years.

If the peach belt can be extended much farther north than the present limit, how much more certainly can we predict that apples of the highest quality will be found that will withstand the severest test of your Boreal climate unharmed. Many attempts have been made to accomplish this by importation from foreign countries but thus far without success. I need not cite you to the hundreds of varieties of apple scions imported from Russia by the United States Department of Agriculture in 1871, or to the importations by A. G. Tuttle, of Baraboo, Wisconsin, and, later, by the Iowa State Horticultural Society, all of which are too familiar to you to need further comment.

All such experiments having failed, how can the good time coming be hastened? By following the method adopted by Peter M. Gideon, C. G. Patten, of Charles City, Iowa, and a host of other co-workers all over the land. Plant seeds of choice varieties and keep constantly at it, until the object is attained. Breed apples right here in your own soil and climate, work with special objects in view—hardiness of tree, quality of fruit, or whatever it may be. Keep on planting and selecting; stick to it. Let the scientist do the finer work of crossing and hybridiz-

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ing, but remember that 95 per cent of all the varieties which we now have in this country are chance seedlings. Only five per cent or less are the result of systematic scientific method of crossing and hybridizing. We could tell you how this is done, but it would be a waste of time, as the most of you are familiar with the process.

Do not underestimate this method of originating new fruits by any means, but don't neglect the other. Great good is being done along this line by such men as Prof. Webber, formerly of the Department of Agriculture, now of Cornell University, who has for one of his projects the breeding of a hardy orange that may be grown farther north, by crossing the sweet orange with the *citrus trifoliata*. He has already accomplished wonderful results.

Mr. Jacob Moore, of Ithaca, New York, who has nearly lived his allotted four score and ten, is as zealous today as when he began his work of originating new fruits. We are indebted to him for the Red Cross currant. Of late he has been turning his attention to the breeding of new pears and grapes, and his efforts have been crowned with wonderful success. Among the hundreds of new productions we find some very choice varieties.

Mr. Arthur T. Goldsborough, of Washington, D. C., holds the world's record for the largest strawberry so far as known. He has for his hobby the improvement of the strawberry. He has kept constantly at it for years, until last year he grew berries that weighed four and three-quarter ounces, weighed on the scales in our office.

Scores of other experiments scattered all over the land could be mentioned, all working silently for their own chosen specific object.

We are constantly receiving every year thousands of specimens of fruits, from the tropics to the northern limits of fruit growing, for identification and examination. The new fruits almost invariably are chance seedlings.

I cite you to these few co-workers to show what is being done and the interest that is manifested in this grand good work of originating new fruits.

Your state has the proud distinction of having produced an apple, the Wealthy, that is today grown over as wide an area of country as that famous old variety, Ben Davis. It comes to us at the Department of Agriculture at Washington from the entire apple growing region from Maine to Oregon, Idaho and California, and from as far south as North Carolina and Tennessee, and as grown in all these various sections it is universally one of the best of its season. Right here it is proper for us to pause for a moment to pay tribute to the originator

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of this valuable heritage which he left to posterity—Peter M. Gideon, a name which will ever stand out in bold relief in the annals of American horticulture. Unrequited and lightly appreciated while living, he labored incessantly for the good of humanity and pomology in particular. In dire need, he scorned the premiums offered for his new apple. In the evening time of his life he originated the Wealthy—the apple which has been worth millions of dollars to this country. His work is his best eulogy.

One of the most interesting visitors I ever had at the Division of Pomology was J. S. Harris, of La Crescent. He was the living embodiment of Charles Wagner's "Simple Life." He was plain and practical. His life had been a strenuous one, full of hard struggles, but his temper was sweet. His good nature was not tinged with acrimony and no pessimistic prejudices biased his judgment. He was active, energetic, swift in thought, keen in intuition and gentle in demeanor. His fund of pomological knowledge was simply amazing. We talked over the pomological problems in Minnesota and felt when we concluded that we had only reached the preamble of its possibilities. With unerring judgment he spoke of the power for pomological progress the national office possessed. Alas! The next news I had from far off Minnesota was that the grim reaper Death had laid its icy hand on Friend Harris, just at a time when his life work seemed nearest to realization. And then Minnesota was called upon to bid adieu to that incomparable trinity, O. M. Lord, Wm. Oxford and Jonathan Freeman. Their words and work will long linger in the memory of this society.

Here in the granary of the world, Prof. S. B. Green has for many years been steadily teaching you both by example and precept what to grow and how to grow it. He and others have impressed upon you the study of system, the importance of tillage and of cover crops. You have seen pomology grow from garden to grove and from grove to commercial orchards of significant importance. In fruits you have first developed the commercial type, and now you are struggling to produce the connoiseur type.

Since merchandising of all kinds has established new ideals and developed new values, your pomology has had to be aggressive. There was a time when your population was sparse and widely scattered and your villages were small and isolated, so that it was impossible to organize and co-operate, as do the fruit growers of California and Oregon. But that time is happily past. Steam and steel have forged the iron-horse trail across your billowy prairies, and horticulture has taken on a new aspect.

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Minnesota is carrying off her share of prizes at the various universal expositions; and a fruit exhibit from Minnesota is sure to attract attention wherever it is displayed. The clothing of Minnesota's prairies with commercial orchards will not only abundantly increase her wealth but will add the third jewel to the crown of the "bread and butter state."

You have vast areas of natural fruit soils that if properly manipulated will produce fruits of finest quality and color. In this "land of sky tinted waters" let there be vast orchards bearing beautifully sun-colored apples fresh from nature's paint brush! The rapid pomological development of your state should but set the pace for greater achievements. Keeping eternally at it wins the race. You have the making of a great and populous country. Let your people grasp the national ideal, "In union there is strength."

Annual Report, Minnesota Rose Society, From June 13, 1906, to Dec. 3, 1907.

MRS. F. H. GIBBS, ST. ANTHONY PARK, SEC'Y.

Five meetings of the executive committee have been held since the last annual meeting on July 15, 1906.

The society put up a very attractive exhibit at the state fair in Sept., 1906, and by so doing gained the good will of the state fair management, which offered a special premium for floral societies for 1907. Fourteen new members were added to our list by having this exhibit, and the rose society became better known.

The mid-winter meeting was held at the residence of the president, Mrs. H. B. Tillotson, 1320 Fifth St. S. E., Minneapolis, on Jan. 22, 1907, when the following programme was given:

Perennials and Their Care, Mrs. D. W. C. Ruff, St. Paul; Raising Plants from Seed, Chas Rixon, St. Louis Park; Hardy Lilies, Mrs. John Hawkins, Minneapolis; Hardy Roses, Chas. G. Nordine, Lake City; Address, Wyman Elliot, Minneapolis; Address, A. W. Latham, Sec'y Minnesota Horticultural Society, Minneapolis.

On Feb. 9, 1907, the Minnesota Rose Society became an auxiliary to the State Horticultural Society. At this date it was also voted to change the annual meeting from June to December.

The Minnesota Rose Society held its Annual Flower Show in the Mayor's Reception Room in the Court-house, July 13, 1907, which was a great success.

The society had a very nice exhibit at the state fair. All flowers were entered by the members. The society received $30.25 as its share of the premiums.

We will miss Mrs. A. S. Hanson from our midst, as she is a great lover of flowers and always a willing worker. Washington has gained what Minnesota has lost.

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VICE-PRESIDENTS' ANNUAL REPORTS

Vice-President's Annual Report, 1907, First Congressional District.

J. W. RAMSDEN, HOMER.

In response to circular sent out I got replies from all parts of the district, and the following is a summary of their reports:

Apples: Generally a good crop and brought good prices. Trees in good condition for the coming winter, wood well ripened. The Wealthy blighted some among young cultivated trees.

Plums: Light crop.

Cherries: Almost total failure. The buds went through the coldest part of the winter safely and were all right until the latter part of March, at which time we had a heavy sleet and ice storm. Immediately following the buds showed injury, and although the trees bloomed quite heavily the blossoms seemed to lack vitality enough to produce fruit. This applies to all varieties.

Grapes: Prospects were fair, but they did not ripen well.

Blackberries: Good crop.

Raspberries: Good crop.

Strawberries: Fair crop.

Currants: Good crop.

Spraying is being more generally practiced, especially in Winona and Wabash counties.

Best Varieties.

Apples: Duchess, Wealthy, N. W. Greening, Utter's Red and Yahnke.

Plums: De Soto, Stoddard, Wyant and Surprise.

Cherries: Homer.

Blackberries: Ancient Briton, Snyder.

Raspberries: Cuthbert, Loudon, Gregg.

Strawberries: Bederwood, Sample, Warfield.

Gooseberries: Downing and Houghton.

Currants: Red Cross, Red Dutch.

On August 6th the southeastern part of Winona county was swept by a wind storm of cyclonic nature that practically harvested the entire apple crop in the section that it visited and did immense damage to trees. One grower, Mr. C. W. Merritt, lost 365 trees broken off and uprooted. Many other orchards suffered in about the same proportion. Fortunately the area covered by the storm was not great, confining itself almost entirely to the township of Homer.

Taken as a whole, the season was satisfactory to the growers in this district.

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Vice-President's Annual Report, 1907, Second Congressional District.

WM. PFAENDER, JR., NEW ULM.

The twenty-five query sheets forwarded to me by our secretary for the purpose of sending them out in our district to ascertain the condition of fruit trees, fruit crop, etc., were sent to fruit growers and members of our society in the principal points of our district. My report is based on the fourteen answers received.

Wm. Pfaender, Jr.

Apples: Apple trees were in good condition, and the crop was good and *very good* in most places. Wealthy and Patten's Greening head the list in producing fruit. Some report young trees of the Northwestern Greening winter-killed, while older trees were in good condition.

Plums were a total failure all over the district, on account of late frosts, except a few points where a three-fourths crop was reported in protected places.

Cherries: Very few planted and some killed by blight where planted.

Grapes: Few planted and crop was late; Janesville, Concord, Moore's Early and Worden mentioned mostly.

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Blackberries: Only two report a good crop. Other reports state either none planted or where planted were winter-killed; no varieties named.

Raspberries: Four report a fine crop, three a light crop and two a poor one. Rest of reports state that few were planted.

Strawberries: Majority report a good crop. Dunlap, Bederwood and Warfield mostly planted.

Currants and Gooseberries: Poor, according to most reports.

Nursery Stock: There was considerable planted with good success.

Blight: Very little, mainly on Hyslop and Early Strawberry.

Spraying of fruit trees is not practiced, according to reports.

In the fall of 1906 apple trees held their leaves until quite late, but the soil was in good, moist condition, and trees came thru winter with little loss.

The last two questions as to hardy perennial flowers and hardy ornamental shrubs show that both are not much planted.

Vice-President's Annual Report, 1907, Third Congressional District.

J. M. WALDEN, NORTHFIELD.

In making out the report for this district I used the circulars furnished by this society comprised of the following questions:

Question: What is the present condition of the following fruits in your vicinity and the kind of crop borne this year?

Answer: Conditions good by twenty.

Apples: Crop good by twelve, fair by eight.

Plums: A failure by twelve, poor by two, good by two.

Cherries: A failure by ten, none raised by ten.

Grapes: Hurt by frost eight, very good by four.

Blackberries: Short crop by two, good crop by six.

Raspberries: Crop short by ten, good by four.

Strawberries: Crop good by twelve, fair by eight.

Currants: Crop good by two.

Gooseberries: Crop good by two, poor by two.

Question: Has there been much nursery stock planted in your section this year, and with what results?

Answer: Not as much as usual by twelve, with good results by ten, poor by two.

Question: Has there been much blight, and what has been done to combat it successfully?

Answer: But little blight. Not anything done by fifteen, cutting out the blight one.

Question: What is being done in the way of spraying orchards?

Answer: Sprayed three times by one, once by four, not any by fifteen.

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Question: Did fruit trees or shrubs suffer any from cold last winter?

Answer: No by eight, yes by six.

Question: If so, what varieties and what were soil conditions last fall?

Answer: A hard winter on Northwestern Greening by six. Soil conditions wet.

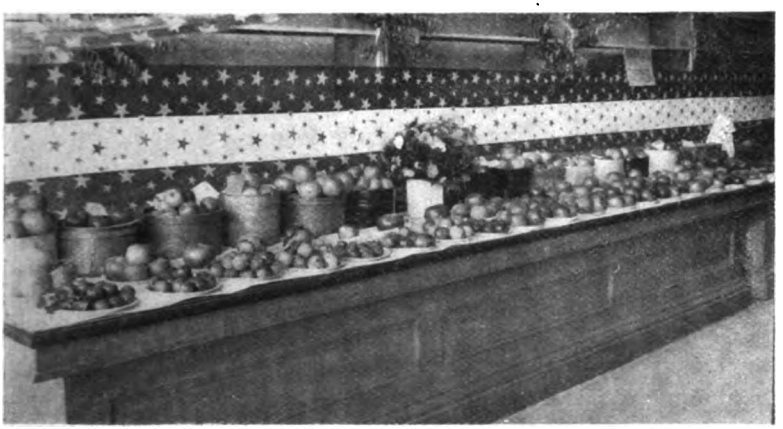
Question: Did trees hold their leaves late in the season?

Answer: Yes by ten.

Question: Are fruits going into this coming winter in good condition for wintering well, and is there much or little water in the soil?

Answer: Soil quite dry by fifteen, good condition by eighteen.

Question: Please give here a short list of varieties of fruits of all kinds doing best in your locality.



Fruit exhibit at Northfield street fair, 1907.

Answer: Apples—Wealthy, Patten's Greening, Duchess, Okabena, Malinda, Hibernal, Peerless, Iowa Beauty, Longfield, Wolf River, Northwestern Greening.

Crabs: Whitney, Faribault, Early Strawberry, Florence, Brier Sweet.

Plums: De Soto, Surprise, Wolf, Wyant.

Cherries: E. Richmond, Montmorency, Wragg, Compass Cherry plum.

Blackberries: Ancient Briton, Snyder.

Red Raspberries: Cuthbert, Loudon.

Black Raspberries: Cumberland, Older.

Currants: Red Cross, North Star, White Grape.

Gooseberries: Downing, Pearl.

Strawberries: Bederwood, Sen. Dunlap, Warfield, Crescent.

Question: Give list of desirable and hardy perennial flowers.

Answer: Peony, phlox, poppy (Oriental), golden glow, bleeding heart.

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Question: Give list of hardy ornamental shrubs.

Answer: Hydrangea p. g., lilac, spirae V. H., snowball, mock orange.

In closing this report will say that I have followed so far as I could the wish of the members, filling out the circulars sent to them. I find that the most of them have a hobby of their own, and as I have not the time to present it to this meeting I will leave it in their hands.

Mr. T. C. Smith, of Lakeville, Minn., writes me that he had 1,980 bushels of apples this year; 2,500 bushels in all were shipped from Lakeville.

Our friend Wilfert, of Cleveland, writes that for the first time in the history of Le Sueur county apples have been shipped from there by the carload.

G. C. Simpson, of Northfield, Minn., claims 800 bushels of apples this year.

Surely Minnesota is coming to the front as an apple state. Will also say that the parties that raised the most and best fruit sprayed one or more times. Take notice and do likewise!

Some thirty-eight years ago I was induced by a friend to invest in a few fruit trees, and he had a leader which he recommended, and that was the Beecher Sweet. I did not invest heavily, only one tree, and I found that to be a failure. I did, however, buy a few apple trees, mostly crabs, and principally the Transcendents. That was my first attempt at growing apples. The Transcendent proved a success until the blight came and destroyed it. Then I have a Duchess which has borne apples right along until the present year. Of course it has lost its heart and sprouts have come up from the stock, but it is still producing apples. My Beecher Sweet went to the wall. I did not invest extensively in apple trees for ten or fifteen years, and then I was induced to buy a dozen Wealthy trees. They were highly recommended, and the nurseryman told me to buy them in the fall and heel them in. I followed the instructions he gave me, which were that I should cover the roots, and the tops would take care of themselves. I did so, and the result was ten dead trees. I saved the other two and they leafed out in the spring and after a number of years produced one or two apples, but they were nothing to brag about.

About thirteen years ago I changed my residence and thought I would like to have a few apple trees, so I invested in a few Duchess, Transcendents and Faribault crabs—and I want to say that the Faribault has proved a success with me in many respects. It is a hardy

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tree, not subject to blight, the apple is of a good quality, about the size of the Whitney—most of you are acquainted with the apple—and the keeping quality is as good as that of any I have ever grown. It makes a fine baking apple, and it is excellent, and I regard it in every way as satisfactory. I can recommend the Faribault crab as a good all around apple.

Well, I thought I would try a few more Wealthys. The place was not a good one for apple trees, being surrounded by forest trees—and you all know the Wealthy is subject to blight—and in that sort of a situation I planted my trees. They grew finely, and I took lots of pains with them and forced them to grow, which was probably a disadvantage to the tree in that position, and the first year they began to bloom and then blighted, and they are practically dead at this time. Later I set out more Wealthys, and it is the best apple we have. I tried a few Northwestern Greenings and had great expectations from them. It has proved itself practically a failure; it is not hardy enough for our cold climate, and I do not believe it will stand our winter.

I do not know that I have anything further to report except, perhaps, to say a few words about small fruit. I have some raspberries and have raised good crops the last five years. I used to raise the Philadelphia, and I always got a good crop, but they are not a good berry to sell. Plums were a failure this year, cherries were a disappointment, even the Compass cherry is not adapted to our section of the country. We have had them for the last three years, and they have proved a failure. I raised a few blackberries; I have the Ancient Briton and the Snyder. Of the strawberries the Bederwood, the Senator Dunlap, the Warfield and the Crescent seem to do the best. I also have a lot of grapes, but for some reason in late years they do not seem to ripen.

ANNUAL MEETING OF THE EXCELSIOR FRUIT GROWERS' ASSOCIATION.—This meeting was held at Excelsior on Saturday, Dec. 11th. Prof. Green and Mr. Elliot took part in the program. The report shows the association in a very flourishing condition and that the business of the year 1907 was conducted at an average cost of 5% of the total sales. A successful business organization.

ANNUAL MEETING, MINNESOTA AGRICULTURAL SOCIETY.—A three days' session of this society was held in St. Paul, Dec. 14-16 with the usual program on general agricultural topics. The annual report of the society shows the State Fair Association to be in a very prosperous condition. All of the old officers were elected except in the case of one of the directors, Mr. G. W. Patterson, who declined to stand for re-election, and Mr. Geo. Atchinson, of Mankato, was selected as his successor.

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Vice-President's Annual Report, 1907, Fourth Congressional District.

T. T. BACHELLER, FOREST LAKE.

To one not in touch with the orchard interests of this section the reports received are quite a revelation. One grower gives a list of leading orchards of his vicinity, aggregating about 10,000 trees, mostly apples, about one-half of which have been set out during the past year. Another speaks of a general awakening among the farmers of the same section as to the value of fruits on the farm. In one section we learn of important experiments with apple seedlings, but they are mostly too young to bear. Nurserymen operating in this district have made sales during the past year fully 30 per cent ahead of any previous season, and the reports of plantings would very generally conform to this estimate. Specifically, the record of the year for the different fruits may be summed up about as follows:

Campbell's Early grapes, grown by Mr. D. W. C. Ruff, Bald Eagle.

Apples: The apple crop ranged from fair to excellent, in most cases better than in average seasons, and in some instances the best for several years. The fruit has been generally excellent, keeping well after picking. The size has been rather small in a few instances or the yield light, but they were rare exceptions to the rule. Prices have been phenomenal, making the crop unusually profitable. Trees are almost everywhere in good condition, though some were injured by August storms, which also blew off considerable fruit. One grower tried boxing his trees, as advocated by some professional growers and experiment station authorities, and lost many fine 7-year-old trees, through the work of ants nesting in the enclosures. One grower re-

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ports considerable blight, and another finds it only on his Transcendents, which are "blighting to death." Another has the same trouble with this variety only, but as a rule there is no blight or leaf-scab at all or less than in previous years.

Very little spraying has been done, though one reports satisfactory results with the dust-bath, and several have found the bordeaux mixture of decided benefit to both trees and fruit.

In varieties the preference seems to be for Hibernal, Patten's Greening, Duchess, Wealthy and Longfield, in about the order named, with mention of Malinda, Okabena, Gilbert, University and some others in individual lists. The preferred varieties seem to be the heaviest bearers.

Plums: The plum crop was a total failure in most orchards, though there were some exceptions noted. A few reported a light crop, and one had a good yield with Forest Garden, De Soto, Wyant and Stoddard varieties, which he believes the best for this section. Indeed the approved varieties seem to be all in this list, with the exception of Rollingstone mentioned by one grower. Trees are generally in good condition, though some were injured by the August storm referred to, and the fruit from damaged trees rotted badly.

Cherries: Cherries seem to be very little grown in this district, one report only giving an average crop, and another a very light one from Wragg and Homer varieties.

Grapes: Grapes are grown throughout this section to but a limited extent, but the yield for the past year was very large, the best ever gathered in many cases. Mr. Ruff, of Bald Eagle, reported a single bunch of Campbell's Early weighing 1½ pounds, which the writer photographed at the recent state fair. But the season was so late that the frost caught a large proportion of the crop before maturity. Beta and Janesville were the only other varieties mentioned in the reports, though the list grown must include many others.

Blackberries: Blackberries gave a good yield where the canes had been covered, but the yield from unprotected bushes was very light, and in many cases they were killed back badly. One grower mentions Snyder and Briton as good producers, but as a rule blackberries are not much in evidence in this district.

Raspberries: Raspberries have done well almost universally. "Exceptionally ahead of last year" says one, while another reports a "bumper crop on King, the best red," etc. Only one or two had less than average yields where canes were covered. In most cases the report on blackberries will apply equally well to raspberries. Disease

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on the Loudon was mentioned by one. Varieties mentioned were Turner, King, Loudon, Ohio, Gregg and Miller.

Strawberries: The reports on strawberries vary largely in different sections. The yields have been given as very light, half-crop, fair crop, up-to-average, good crop, full crop and very abundant yield. Small yields have been in the minority, and the quality has been generally fine. The season was short, the fruit ripening late in many localities. The varieties mentioned, about in the order of precedence, were Warfield, Splendid, Sen. Dunlap, Bederwood, Sample, Glen Mary and Enhance.

Other Fruits: In most localities but a limited amount of fruits, other than those in the foregoing list, are grown to any extent worth reference. So far as mentioned, currants and gooseberries averaged only fair, while a few reported excellent yields of fine, large fruit. Mention has also been made of cranberries and Juneberries by individual growers.

Miscellaneous: A few of our most progressive horticulturists are experimenting with hardy perennial flowers and ornamental trees and shrubs. In some cases they are very successful, deserving such recognition as we are not prepared to give in this connection.

In general, there seems to be a marked increase in the interest shown in all branches of horticulture, reaching not only to the professional and commercial grower, but enlisting many amateurs with more or less enthusiasm, and having a very desirable influence upon farmers and rural householders throughout the district. This awakening is the direct result of the examples set by a few individuals, whose efforts in the past and their results have proved very effective object-lessons to those about them.

The work of the State Horticultural Society and the State Agricultural School are also compelling attention from all agricultural producers, educating the entire rural population as to the horticultural possibilities of our rapidly-developing commonwealth.

Are Your Apple Trees Mulched?—The absence of snow this winter, with trying winds, is rapidly taking the moisture from the ground and increasing the risk to orchards whose tree roots are not well mulched. Fortunately we have not as yet had in Minnesota any severe and long sustained cold weather. If your trees were well mulched with straw, manure, chaff, hay, begasse, or something else of this sort, you should be in a very comfortable frame of mind about them. Some of the most successful apple growers of the state mulch their orchards; others do not and take chances.

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Vice-President's Annual Report, 1907, Fifth Congressional District.

W. S. HIGBIE, EDEN PRAIRIE.

The winter of 1906-07 was more severe on fruit trees and plants than for several years past. Patten's Greening and Longfield in some places were quite severely injured, while the Northwestern Greening is reported in a number of instances as being killed to the ground, proving conclusively that this variety, which for a number of years seemed so promising, is not hardy enough for this climate.

A Wealthy apple tree in bearing in Mr. W. S. Higbie's orchard, arranged to show clusters.

The cold, unseasonable weather during the spring months made the prospects for fruit look gloomy indeed, but the crop turned out to be better than the promise. Apples were a good crop on most all standard varieties, although somewhat undersized.

The Florence, Early Strawberry and Whitney crabs bore large crops of fine fruit. Transcendent and Virginia were badly affected with leaf rust, and the fruit was scabby in consequence. It is the writer's opinion that this could be entirely prevented by thorough spraying with bordeaux.

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Plums in this district with the exception of two orchards were an entire failure, doubtless due in a great measure to the unfavorable weather at blossoming time, although in the cases of the two exceptions noted, the owners attributed their success to spraying at just the proper time.

All varieties of cherries planted are practically a failure, except the so-called Compass cherry, which does well in light, dry soil.

Strawberries, raspberries, currants and gooseberries were a light crop in most cases, but prices on all these fruits were so exceedingly high that growers report very satisfactory returns. It seems strange that the last named fruit does not receive more attention from fruit growers. With the exception of currants it is the most easily grown of all small fruits and has brought very good prices for several years past.

Blackberries and grapes bore a good crop, but the season was too short for the latter to ripen up well.

We have had very little blight the past season. Trees ripened their wood well and are going into the winter in good condition, with a fair amount of moisture in the soil.

Considerable spraying has been done around Minnetonka and with very good results. It is now quite generally believed that we must spray if we are to get perfect fruit.

The following list of fruits includes the most popular in this section of the state:

Apples: Wealthy, Patten's Greening, Duchess, Okabena and Longfield.

Crabs: Florence, Whitney, Early Strawberry.

Plums: Surprise, Wyant, Wolf, Cheney, Forest Garden.

Strawberries: Sen. Dunlap, Splendid, Warfield, Lovett and Bederwood.

Raspberries: King, Miller, Minnetonka Ironclad.

Gooseberries: Downing, Smith's Improved, Houghton.

Blackberries: Ancient Briton, Snyder.

Grapes: Delaware, Concord, Brighton.

In currants the old standard list of a few years ago is fast being replaced with the larger and new kinds, such as: Red Cross, Pomona, London Market and Wilder.

In regard to apples the crop generally was good. The size was somewhat smaller than usual, but we all know what the prices were, so that it has been a very remunerative crop this year. The apple trees are going into winter quarters in very good condition. It would do no harm if there was a trifle more moisture in the soil, but I think there is little alarm to be felt about that at present. There has been no blight to speak of in this district this year.

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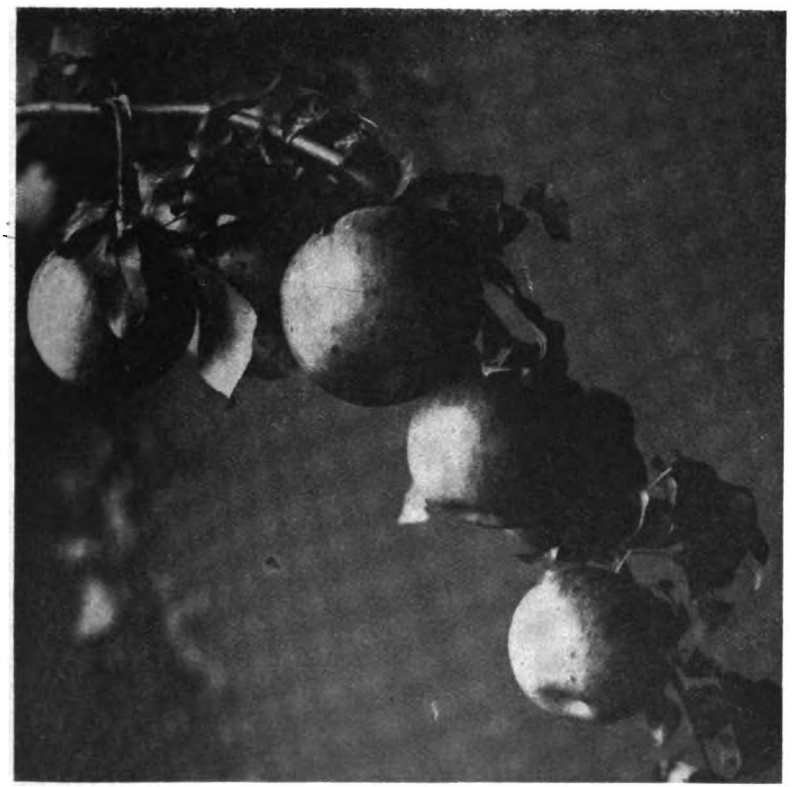
Now, as to variety. Those that are generally popular are the Wealthy, Duchess, Patten Greening, and I could name about twenty-five other varieties that I consider worthy of planting but all of which have their defects. If I had given a list a year ago expressing my personal preference as to the varieties, I should have included the Northwestern Greening. I believe Prof. Green called me to task



A cluster of Wealthy apples.

a little bit for cataloging it as the best winter apple. I was not ready then to go back on the Northwestern Greening, but it looks as though it had gone back on me. I lost several trees that were killed to the ground. Reports from different parts of this district are to the same effect. I also regret to have to report the loss of some Patten Greenings and Longfields.

Plums were a failure with two exceptions. One was the orchard owned by Major Elwin, a report of which we had yesterday, and Mr. Johnson, of Excelsior, also reports a good crop. Cherries amounted

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to practically nothing. Grapes were a good crop, but the short season caught them unripened. Raspberries were a little better than a half a crop; strawberries about half a crop, and gooseberries and currants a fair crop. But we all feel now as though we should not complain concerning small fruit because the price we received was exceedingly remunerative. I want to say right here I think we have neglected too much currants and gooseberries, especially gooseberries. I have found nothing more profitable in the last five years than gooseberries, considering the amount of labor involved in the growing. This was especially true this last year. I always succeeded in getting two dollars a case of twenty-four quart boxes, which is a good price. This year I averaged two dollars and sixty cents per case. I received from two dollars and thirty-five cents to three dollars and twenty-five cents for twenty-four quart cases of good sized fruits.

The Salome Apple.

SAM'L. B. GREEN.

This variety was introduced to the trade by Arthur Bryant, of Princeton, Ill., whose agents sold a good many trees of it in southern Minnesota and northern Iowa in the early '90's. The fruit is of fairly good quality but a little under size, splashed and striped with brilliant red on a yellow ground, and withal is very pretty. The trees bear well. As a rule the fruit is fair, but occasionally it scabs. The tree is a prolific bearer. The fruit keeps until the latter part of winter. Every little while samples of this fruit come to my desk, and this year there has been more than usual. It is possible that it will prove a good variety for general cultivation, but it should be more generally known that during the severe winters of eight or nine years ago many of the trees were killed to the ground, though they afterward sprouted and bore fruit. I am of the opinion, however, that it is hardier than several of the varieties for which we offer premiums, and that it should be put on our premium list, especially on account of its long keeping qualities.

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Vice-President's Annual Report, 1907, Sixth Congressional District.

ELLSWORTH SCRANTON, MONTROSE.

I sent out twenty-five circulars to different members in this district, asking for information and received twelve answers.

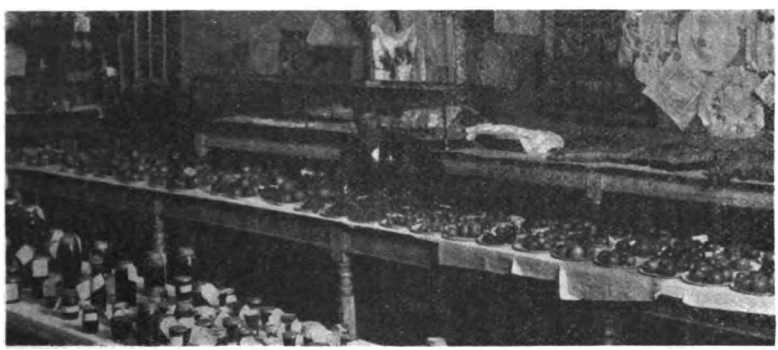
It seems apples were a good crop. Not much blight and no spraying done to speak of.

Plums are a complete failure.

Cherries are not raised in this district, except the Compass, which with me this year was as large as a common plum, but did not bear very heavily.

Grapes bore very well, but not many varieties got ripe.

Blackberries were a good crop in this part of the district but reported poor at most points.



Fruit exhibited by Anton Wilwerding at Stearns County fair, 1907.

Raspberries were fair to good, strawberries the same.

From all reports there has been an increase in the amount of nursery stock planted with good results.

port which can be found on page 144, Annual Report, 1907.

The prospect for fruit of all kinds is very good for next year.

For list of fruits and flowers I cannot improve on last year's re-

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Vice-President's Annual Report, 1907, Seventh Congressional District.

C. J. ORTON, MARIETTA.

Out of twenty-eight circular letters sent out to members of the society I received reply to sixteen. The replies are quite different from the different localities, and it is something of a task to get them in shape to make a report upon, and I presume it took quite a little time and trouble for some to answer the questions in the letters, for which I wish to thank them.

Beginning with the first question: What is the present condition of the following fruits in your locality and the kind of crops borne this year? To this question and the following ones, the replies were as follows:

Apples: Nearly all report the trees in good condition, a few as only fair. Five report the crop as good, eleven a light crop.

Plums: All report the trees as in good condition. Six report the crop as light, ten no crop.

Cherries: Two report the Compass cherry as good, two as fair, nine no cherries.

Grapes: Three report good crop but very late, two only a few raised, twelve none raised.

Raspberries: Six report good crop, seven poor crop, three none raised.

Strawberries: Twelve report good crop, two poor crop, two none raised.

Has there been much nursery stock planted in your section this year and with what results? Eleven report a good deal of stock as being planted, eight as doing well, three as not doing well, and five not much planted.

Currants and gooseberries reported good.

Blight: Fourteen report not any or very little, two crab apples as blighting some. There seems to have been nothing done to check it except in two or three cases it was cut out and burned.

Spraying: Ten report no spraying done, six a very little.

Did fruit trees suffer from cold last winter, and if so what varieties, etc.?

Eight report no damage from cold, eight some damage. One reports 500 Northwestern Greenings as killing back quite badly, and two report Malinda as suffering some.

Are fruits going into winter in good condition, and is there much or little water in the soil? Fourteen report trees as being in good condition, one not, one average, and thirteen say there is very little water in soil.

Varieties of fruits doing best in each locality? This question was not very fully answered. The Wealthy heads the list with eight votes, Duchess eight, Hibernal five, Patten's Greening six, Northwestern

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Greening four. There were one or two votes apiece for the most of the apples on the fruit list.

Plums: De Soto heads the list with four votes, Surprise and Forest Garden, one apiece.

Compass Cherries: Two vote as being the best cherry.

Only two or three gave a list of anything but apples. Two or three mentioned in grapes Agawam, Concord, Beta.

Young orchard with raspberries between the rows at C. J. Orton's place.

In strawberries two or three mentioned Senator Dunlap, Bederwood, Warfield, Marshall, Hathaway, Parson's Beauty, Crescent.

Perennial Flowers and Shrubs: Only eight gave a list, in which the following are included: Phlox, peonies, columbine, rudbeckia, hydrangea, snowball, bleeding heart, lilac, spirea, wisteria, highbush cranberry, Japan quince, coreopsis, etc.

The only general remarks were that with plenty of moisture and care most any of the hardy varieties of fruits and flowers would grow and thrive.

Fellow-members, the district which I represent in my report is in the western part of the state, and fruit growing is largely in the experimental stage. There are a few bearing orchards, but a large part of the district does not even raise strawberries and raspberries. The main feature of my formal report is that one grower reported a damage to the amount of five hundred dollars to his Northwestern Greenings, and two growers reported the Malinda damaged. In regard to the small fruit the majority of the report indicated that there was about half a crop. Plums were in all cases a failure. On our own plantation of about one hundred apple trees I saw no damage from winter-killing, but my crop of plums was a failure and strawberries and raspberries were less than half a crop, blackberries were a light crop, and grapes did not ripen at all.

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Vice-President's Annual Report, 1907, Eighth Congressional District.

L. B. ARNOLD, DULUTH.

Owing to the pressure of other work, I have not had the opportunity to make as complete an investigation of the horticultural possibilities of the Eighth Congressional District as I would have liked to have done.

Strawberry field of Chas. F. Serline, Mora.

I have reports from the following gentlemen, who are successfully growing fruits, and I gather from them that the industry while well launched will require time to develop the kinds and varieties best adapted.

Mr. J. U. Sebenius, Duluth; Mr. John N. Tidd, Meadowlands; Mr. A. J. McGuire, Grand Rapids; Mr. D. C. Hazelton, Cutler; Mr. E. B. Wells, Verdon; Mr. J. C. Patterson, Jacobsen; Mr. Peter Hall, Bennettville; Mr. J. C. Gluesing, Willow River; Mr. Martin Oppegaard, Kimberly.

Apples are so influenced by the location and care given them that it is impossible to select varieties best adapted until more fully tested. However, most of the standard crabs and many other kinds are doing well. Cherries are good, blackberries very profilic. Grapes do not

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mature well, owing to our short season. Raspberries thrive exceedingly well. Most of the standard varieties are very satisfactory. However, the old Brandywine and Cuthbert are always to be relied upon to stand the climatic changes and give a good crop. Strawberries are a big crop and, as a rule, do very well with us. One of our correspondents reports them as yielding three thousand quarts per acre. Though not extensively grown here as yet, many people have their "little patches" of berries and enjoy the finest fruit possible to be grown. Standard varieties do well and other small fruits, such as currants, gooseberries, dewberries, black caps, etc., are very satisfactory, and with care and a little protection produce immense crops and thrive well.

Crab apple on place Otto Wasserzieher, Bay Lake, Aitkin County.

It is safe to say that horticulture will receive considerable attention in this locality and that no other region is better adapted to small fruits than is this. They mature after those of the south and central portions of the country have finished and have a market exclusively their own.

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Vice-President's Annual Report, 1907, Ninth Congnessional District.

OTTO KANKEL, FERTILE.

To make a report on fruit conditions in this district is no easy matter. The people around here are new beginners in fruit raising in this part of the district, although I was very much surprised to see some trees grown around here that looked so healthy and thrifty.

I sent out twenty-five circular letters and received about eighteen well answered letters. One man says he has no fruit crop, but says he had a good crop of Irish "spuds," wheat and flax.

Fruits, especially apples, plums and small fruits are doing nicely here. Apples were a good crop on trees the year 1907. The varieties doing best are Duchess, Hibernal, Charlamoff and Patten's Greening.

Residence of Otto Kankel, Fertile.

Crabs were loaded—one man "made fifty dollars off four trees"; best varieties Whitney, Early Strawberry, Martha, Virginia and Transcendent.

We had a good crop of plums, and this is the first year the fruit didn't ripen, but that was due to the late spring. The varieties are De Soto, Surprise, Forest Garden and Wyant.

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There are not many grapes raised around here, but a few are beginning to raise them now, and I myself had a very large crop of the Concord, and this is also the first year they failed to ripen, because of the late spring. The grapes raised here are the Beta, Worden and Concord.

There was a very good crop of raspberries and blackberries, also of currants, gooseberries and especially of strawberries. There was a good market for strawberries in our vicinity this year; those doing

Fruit exhibit at the Polk County fair at Fertile, Minn.

best were Bederwood, Lovett, Splendid, Senator Dunlap and Warfield.

There has been quite a little nursery stock planted. Nils Clementson planted five hundred and fifty apple trees this spring. I was out to his place to look at the trees, and they are all looking pretty good. There are others who have planted some also.

The finest orchard I have seen in this part of this district is about eight miles from my home. It is owned by Mr. Gust Nygvist. He has about one hundred trees and about half of them are in bearing. The varieties he has are Duchess, Hibernal, Charlamoff, Patten's Greening and Malinda, and several different varieties of crabs. There are several others with smaller orchards in our vicinity. We had a very nice display of nice, large, clean fruits raised around here at our county fair, fruits which our fruit growers have a right to be proud of for this part of the Ninth Cong. District.

There were not many answers in regard to seedlings, but I have seen and heard lately of some who raise them. I saw some very nice apple seedlings in Red Lake county grown by William Demann. The

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trees measure about six inches in diameter and are about twelve to fourteen feet high. They bear nice large apples, but at the time I saw the fruit it was only half grown. The trees looked healthy and thrifty, but they are too near the pine shelter belt, and they haven't been cultivated nor taken care of the way they should be.

I have about five hundred apple seedlings from one to four years, and some measure six feet high. Mr. Solem, of Halstad, was here at the fair, and he says they are the finest lot of seedlings he has seen. I think my seedlings will do well here, as my location is a low sandy river bottom. Nursery stock doesn't seem to do well here, but it is not the fault of the trees, it is the location. All the trees I saw in the surrounding country are doing nicely, as they have fine locations, rolling lands, drainage and clay subsoil.

I think in time this will make a good fruit raising country if the right kinds of fruit are planted. I depend a great deal on our seedlings. I wish I had been a member of this society twenty years ago, as I would have been a fruit grower by this time.

The trees came out nicely this spring, even if the thermometer did read forty degrees below zero. The trees are going into winter quarters with plenty of moisture in the ground. The wood is pretty well ripened, even if we did have a short season. It seems as if the foliage doesn't stay on as late this year as usual, but I think it is due to the early frost.

There hasn't been much blight this year, nor there isn't much spraying being done yet.

I have read so much about root-killing, but I haven't seen a tree root-killed here yet, only top-killed.

I may report to the society of the eight apple trees grafted on Pyrus baccata, which I received from Prof. Green and planted two years ago. These have been cultivated during the two years, and they are doing splendid; they are the best trees I have. I have two of them planted in the sod, and those are the best; they made a growth of twenty-four inches this last year.

Now a little about plum pockets. In volume thirty-two in Secretary's Corner, on page 158, you will find Prof. Green's remedy for plum pockets, which I think is very good. I believe very firmly in spraying with bordeaux mixture because I tried it with success. I sprayed my tame plums, also some wild plum trees in the woods, and when I was through spraying I noticed one twig about one foot long that didn't get any of the mixture, and I watched this twig with great interest, and was very much surprised to see there were no plum pockets on the part which was sprayed, but the twig which was forgotten was full of plum pockets. I did this two years ago. Last year I didn't spray, and there were some plum pockets, but not so many. I believe in spraying.

I think this society is one of the best organized societies I know of; it has helped our country wonderfully; it is interesting as well as instructive.

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Southern Minnesota Horticultural Society, Annual Meeting, 1908.

O. M. PETERSON, SEC'Y, ALBERT LEA.

The fifteenth annual meeting of this society was held in Albert Lea on Jan. 14th and 15th. The place of meeting was the commodious court room of the city hall, and the firemen's hall adjoining was used for the apple display. This society has always been noted for its successful meetings, but in the opinion of the oldest members the one just closed was the best ever, both as to attendance and exhibit of fruits. The territory covered by our society was favored with an abundant crop of apples the past year, and prices received were comparatively good, and that this has created a larger interest in horticultural matters is evinced by the increased attendance at our meeting.

Owing to the illness of President Massee, the meeting was called to order and presided over by Vice-President L. P. H. Highby.

The general subject of the first session was "Practical Orcharding." There were many reports of profitable orchards. The best report, and one that is certainly hard to beat, was that of F. W. Kimball, of Austin, who has an orchard containing two and one-half acres, which yielded him an income of $723.00 net, after paying all expenses of picking, draying, barrels, etc. A remarkable feature of this orchard is that it contains ninety different varieties. If it had consisted of only a few of the best varieties, Mr. Kimball is certain that it would have netted him as much as $1,200.00. With such profits there is little wonder that orcharding is receiving so much attention, and now that people begin to realize the possibilities for money making in this line there is no doubt that southern Minnesota will soon add greatly to its already large number of commercial orchards.

The evening session was held in the court house. It was the object of the society to interest the young people in horticulture by securing their attendance at this session, and thanks to the active work of local horticulturists the large court room was filled with an interested audience. The essay prize offered was won by A. T. Vollum, a student at the City High School. For the main part of the evening entertainment, we are indebted to the able services of C. H. Farnsworth, Miss Blackmer, E. F. Peck, R C. Livingston and Clarence Wedge.

Windbreak, ornamental planting and forestry were the main topics of the Wednesday session, headed by an able paper by E. Blakeman, delegate from the Northeastern Iowa Horticultural Society. At the last session small fruits and seedlings were discussed.

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The papers presented were all exceptionally good, and thus a profitable as well as enjoyable time was spent by all who attended.

The number of plate of apples exhibited was 300, which included several promising seedlings, seven pecks of apples and ten samples of corn.

The judges of fruits were:

S. D. Richardson, E. Blakeman and C. M. Jensen.

The election of officers resulted as follows:

President L. P. H. Highby, Albert Lea; vice-presidents, P. Clausen, Albert Lea, and O. W. Moore, Spring Valley; secretary, O. M. Peterson, Albert Lea; treasurer, L. W. Prosser, Le Roy.

Committees appointed for 1908 were:

Committee on seedlings: R. C. Livingston, Jens A. Jenson and Chr. Berthelsen.

Committee on fruits: J. C. Hawkins, O. W. Moore and C. M. Jensen.

The following is a list of the papers presented on horticultural topics:

TUESDAY AFTERNOON.

"Apple Orcharding in Fillmore County," O. W. Moore, Spring Valley, Minn.

"Top-Grafting Apple Trees," C. M. Jensen, Albert Lea, Minn.

"Observations of Fruit Raising in the Older States," C. H. Farnsworth, Albert Lea, Minn.

"Some Orchards in Worth County," O. N. Kjerland, Northwood, Iowa.

"The Outlook," Chas. F. Gardner, Osage, Iowa.

TUESDAY EVENING.

Reading of Prize Essay on Hygiene, Utility and Ornamentation in Horticulture.

Address, "Our Neglected Small Fruit Industries," Hon. H. H. Dunn, Albert Lea, Minn.

WEDNESDAY MORNING.

"Horticulture in Northeast Iowa," delegate from Northeastern Iowa Horticultural Society, E. Blakeman, Decorah, Iowa.

"Re-Forestation," Chr. Berthelsen, Albert Lea, Minn.

"Care of Nursery Stock in Transit from Nursery to Planter," D. M. Mitchell, Owatonna, Minn.

"Evergreens, Their Variety and Care," Jens A. Jensen, Rose Creek, Minn.

"The Nursery Salesman," A. J. Hoyne, Albert Lea, Minn.

WEDNESDAY AFTERNOON.

"The Growing of Grapes," R. C. Wedge, Albert Lea, Minn.

"Seedlings," L. W. Prosser, Le Roy, Minn.

"The Growing of Small Fruits," J. M. Lindsay, Austin, Minn.

"My Experience with a Hot Bed," E. C. Frost, Albert Lea, Minn.

"Corn and Corn Growing," E. F. Peck, Austin, Minn.

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My Commercial Orchard of Nineteen Hundred Trees.

T. C. SMITH, LAKEVILLE.

I started my orchard in 1898, and added to it for four years, until now I have 1,900 trees. I will not discuss at length the usual methods of planting and taking care of an orchard, but will simply make a few statements of facts and results for the benefit of beginners and others interested in the commercial orchard.

One of the most important points is to select the right varieties of apples for this latitude, and the next is to be sure you get trees from good, reliable northern nurseries. Do not allow any substitution in the order. The nursery that substitutes, without the express permission of the buyer, is not worthy of your confidence. Do not be deceived by strangers or by acquaintances who have some wonderful new things to sell (at big prices) which you have never heard of before. If there is anything new of real merit, some horticulturist has heard of it as well as the other fellow.

When you plant trees, dig big holes and set each tree four inches deeper than when in the nursery. Put in good top dirt and tramp solid. Cut off all broken or bruised roots with a sharp knife, and cut back the top to correspond with the roots. I prefer a low-topped tree to a high one, as the limbs will soon protect the body from sun-scald, and the apples are much easier to pick.

For four years cultivate each year so that pigeon grass and other vegetation will cover the ground and hold the snow where it falls, and thus prevent deep freezing, which might otherwise injure the young trees.

The fourth year after planting, plow early in the spring, being careful to have the ground smooth and level, and sow to red clover. Mow only once each year, about July 10th, and leave the crop on the ground. Let the second crop grow up through it; this will make the ground rich and keep it loose and moist. It will make a splendid soft bed for apples that fall off and prevent bruising them, and will keep them clean. It will also prevent blight in a great measure, in my opinion. This double cover will prevent deep freezing in the winter, and will protect the roots of the trees.

In our judgment a clay soil, or at least a clay subsoil, is best, and the land should be above the level, and, if possible, it should be lower on the north and east, in order to insure good air drainage.

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The orchard should be left open on the north and east, with timber on the south and west to stop the force of the hard winds from these directions. Thus located, with right varieties of apples and proper care, there is no reason why the apple business is not as safe an investment for the man of moderate means as any other today.

There are about fourteen acres in my orchard, which I mow, with one horse, in four days. It also takes four days to mow, by hand, between the rows, making eight days in all.

I have a sprayer with truck and twenty-five gallon barrel, complete. With the help of a fourteen-year-old boy, I can spray 400 trees per day. The sprayer cost $25.00. This season I paid $25.00 for bordeaux mixture. I sprayed the trees once this season and have enough left to spray twice next year.

I wish to impress upon your minds the great importance of starting your commercial orchard at the earliest possible date. Remember that "Procrastination is the thief of time."

When I commenced my orchard I was about fifty-five years old. I had no money to speak of, having lost heavily in the machinery business, and I hired out to a harvester company on a salary. I looked about in every direction for some kind of business by which I could make a living, and at the same time get a home before I should be too old for work.

The apple orchard was the only thing that I could think of that would come soon enough for an old fellow like me. I found eighty acres (twenty of which was cleared), near Lakeville, Minnesota, which I could get for $700. I paid $25.00 to bind the bargain, and an old friend loaned me the money with which to make the purchase. And now as to the results:

In 1904 I sold 160 bushels of apples for $125; in 1905 I sold 725 bushels for $500; in 1907 I sold 1,980 bushels for $1,765. You can see what strides that orchard has made since 1904. It needs no argument to convince any one with ordinary intelligence that the sooner one starts an orchard the sooner he will have big returns.

When I bought my eighty acres, it had no fences and no buildings on it. The orchard now has the best fence in the county; there is also a fifty-acre pasture fenced.

I have a fine, big house, and a basement under the entire house in which the apples are stored. In addition there is a good barn, a good warehouse, a good poultry house and a good machinery shed; all of these buildings are well painted.

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Today, it would take just $10,000 to buy the eighty acres, and one more crop will leave me without one dollar of indebtedness. Where can an old fellow, or even many young fellows, do better?

When I started the orchard some said, "the fellow is crazy; he will be in St. Peter asylum in less than three years." But I am running at large, and some of those who were so ready to prophesy my failure would now be glad to be in my shoes.

Hoping for the prosperity of all horticulturists, I remain, as ever, a lover of the grand cause.

Mr. J. M. Walden: I would like to inquire of Mr. Smith what varieties of apples trees he has planted.

Mr. Smith: I have about thirty varieties, Patten's Greenings, Malinda, Wealthy, Peter and Hibernal, etc. I have quite a variety of trees. I think the Peter and Wealthy are practically the same thing. I have two hundred each of Wealthy, Peter and Patten's Greenings.

Captain A. H. Reed: How do you deal with the mice nuisance?

Mr. Smith: I take a scythe and mow the grass away from the trees and just leave enough to hold the snow, and a mouse will not build his nest unless he has something to build it with.

Mr. Grimes: Have you any Northwestern Greenings? I have twenty-six trees, and I know what they are. Every tree that bore fruit was killed.

Prof. Wm. Robertson: How far apart are they planted?

Mr. Smith: The first orchard is fifteen by sixteen, the next sixteen by twenty, and the last is twenty by twenty.

Mr. E. B. Miller: Do you keep a spraying mixture over from one year to another?

Mr. Smith: Yes, I keep it over, but my spraying mixture is in a dry form.

Mr. C. C. Hunter: Do you grow any crab apples in a commercial way?

Mr. Smith: I have two hundred and eighty trees from which I get from forty to fifty bushels per year. They are like the plums, no good; they are not profitable. They do not come up to the standard apple.

Captain A. H. Reed: In what condition was the blossom when you sprayed?

Mr. Smith: I did not spray until the apple was on. Every apple I had was good.

Mr. M. L. Gjestrum: What apple did you have the most demand for, and for what variety did you get the best price?

Mr. Smith: I got the same price for all of them this year, the Hibernals with the rest, and two years ago I got the same price. Commission men were glad to get them.

Mr. Pabody: It is a good plan to mulch the trees?

Mr. Smith: I think it would be.

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Mr. Pabody: That is my habit, to mulch the trees with the first crop of grass and allow the second crop to stand.

Captain A. H. Reed: I thought you said you kept the mulch away from the mice?

Mr. Smith: I try to keep it away from around the trees.

Mr. George J. Kellogg, Wisconsin: Do you find the dry bordeaux better than that you make yourself?

Mr. Smith: I presume I could make it myself, and it would be just as good, but I bought this dry from a drug concern as being the best, as I thought I would not take any chances. I had fine success with it.

The President: Does that have paris green in it or some other poison?

Mr. Smith: It is lead.

The President: Arsenate of lead.

M. J. F. Harrison: I would like to inquire at what age he prunes his trees?

Mr. Smith: I never prune them to amount to anything except crossed limbs. I do not believe in pruning. I keep the body and spurs clean and start the tops low on the ground.

Mr. E. A. Smith: Yesterday a business man asked me if I thought it was possible to grow apples in Minnesota. I answered his question in this way: I said, "The Jewell people have three orchards: the first is a young orchard of three thousand trees coming into bearing next year; the second is an orchard of six hundred Okabena, and the third has twelve hundred trees, largely Wealthy and Jewell's Winter. Now we keep an accurate account of all expenses in connection with these orchards, and the total receipts from these eighteen acres amounted practically to thirty-one hundred and fifty dollars. The total expense, including interest on the investment, rental, taxes, pruning, mulching and every item of expense in connection with the orchard, amounted to fourteen hundred dollars. This leaves a total net amount of something like seventeen hundred dollars as profit on eighteen acres of land." That is the way I answered this gentleman's question, and I asked him if he knew any crop outside of small fruits that could produce as good results. These figures are accurate, and we need all the encouragement we can get in this state. It is only practical work and actual figures that will give us this encouragement.

The President: There is one point a little obscure in Mr. Smith's paper and that is in regard to the protection against mice. I am going to ask Mr. Dewain Cook about that; he has had experience in that line.

Mr. Dewain Cook: Small trees where the snow does not drift in I make a practice of banking up with earth. I have made a practice of planting strawberries after the trees have been growing three or four years, and after the second year when the weeds get in I go in with the mower and mow them off. In addition to that I make a little bank

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of earth from eight to nine inches high. I know that is a sure protection against mice, because they will never climb over a little mound of earth around the trees.

Mr. T. C. Smith: After having three hundred trees injured by mice I bought three hundred protectors and put them on, and I never was troubled with mice in my orchard, and there were thousands of them.

Mr. J. S. Harrison: I lost about two hundred trees last year. My trees were wrapped with burlap, and they ate the burlap out.

Mr. George J. Kellogg (Wisconsin): I never found it necessary to bank around the tree more than a spadefull of dirt; the mice will not touch it.

Mr. W. L. Beebe: My experience at Lake City and in different orchards has been considerable so far as the ravages of mice upon apple trees is concerned. It seems we do not recognize the value of the use of tar paper. Some of the trees that I surrounded with tar paper were not touched at all, they did not go near it, and others wrapped with burlap were badly damaged, and many fine trees were totally ruined. I tried poisoning them with corn soaked in strychnine, cornmeal and arsenic mixed, and while it killed some, they were not all killed, and some trees were still badly damaged, but this year the tar paper did the business.

The President: How did you put it on so as not to injure the bark?

Mr. Beebe: I put it on loosely so it would stand away from the tree. This is the first winter I put it on.

Mr. J. S. Harrison: I had three or four hundred trees covered with wire screen which the mice did not touch at all.

The President: What kind of wire screen was it?

Mr. Harrison: Just common wire screen.

The President: Do you think it will last long?

Mr. Harrison: It will last longer than paper.

Mr. P. H. Frye: I have had some on four years, and it is still on the trees.

Mr. E. B. Miller: I do not think any mouse would be foolish enough to make a nest out of wire screen when it could have burlap. (Laughter.)

Prof. Wm. Robertson: People who wrap their trees with tar paper should be people who know strictly how it should be done. I tried that one year, and I lost a good many trees, and I would not advise anyone to wrap an apple tree with tar paper, because if the paper gets up against the bark it will kill it. I can show you trees that lost the bark down the whole side. It was cooked so that it was practically an inch less in diameter than at the top and bottom of that paper. The safest way is to just bank it up with dirt and let the tar paper alone.

Mr. G. A. Anderson: Wood veneer protects a tree all right and lasts two or three years, and it can be left out summer and winter.

Mr. A. Wilwerding: Use sulphur, and you will have no trouble with mice. I whitewash my trees with lime.

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Annual Meeting, 1908, South Dakota State Horticultural Society.

G. A. ANDERSON, RENVILLE, DELEGATE.

The annual meeting of the South Dakota Horticultural Society was held at Watertown, Jan. 21-23, in the rooms of the Business Men's Association, City Hall, which were well suited for the meeting. The sessions were well attended, especially by people from other points in the state. The society was well received and entertained by the citizens of Watertown.

Your delegate arrived in the evening of the 20th, and was well received and given quarters and entertained at the Hotel Kampesk, which is a first class hotel and a credit to the city of Watertown. I wish to thank the Minnesota society for sending me as a delegate, as I enjoyed the sessions very much. Your delegate was at the first session made an honorary member of their society for one year.

The Tuesday forenoon session was given over mostly to the subject of gardening. The secretary's report was read. He said among other things that the fruit crop with the exception of plums was a fair crop; the country west of the Missouri is fast settling and the society is doing much to encourage fruit growing in that section; the society held a summer meeting in the Black Hills, which section seems to be coming to the front as a fruit section; the best soil for gardening was said to be a sandy loam, one that holds moisture and works easily.

The subject of irrigation received considerable attention, especially by people from the Black Hills. Some, however, were of the opinion that in many instances too much water is being applied, thereby causing the soil to become water-logged, causing injury that is hard to remedy. Some favored less water and more cultivation. Another objection to applying too much water late in summer is that it caused a late growth of soft wood that would not withstand the cold of winter.

Mr. Gurney spoke of the time the apple belt entered South Dakota, people thinking then apples could not be grown in the state. Conditions are now different, as large orchards are being planted with success in many parts of state.

Tuesday's afternoon session was mostly on forest trees and street planting. Forestry is receiving considerable attention by farmers on the prairie, as protection is necessary in order to be

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successful with fruit growing. Norway and Carolina poplars were well spoken of by some as rapid growers. The ash, elm and box elder are also giving good results. For street planting the elm received the most praise.

An evening session was held on Tuesday, given over to the discussion of landscape gardening and civic improvement. There were many good papers read, and the discussions were interesting and instructive to people who take an interest in improving the home grounds.

The session Wednesday morning was devoted mostly to small fruits. Strawberries received the most attention. Soil should be well prepared, plants set carefully and given good care, and success was certain. Varieties spoken of as the best were Warfield and Dunlap; matted row system favored by most growers. Your delegate read a paper on "My Commercial Apple Orchard," in which he recommended wood veneers for protection against mice. This was thought by some not effective. One recommended poison. This was objected to by friends of the birds, which I think is just.

Prof. Hansen gave a talk on his new hybrid plums, which was interesting. He also spoke of his new red raspberry which is hardy without protection.

Wednesday's afternoon session was held in the opera house, a large number of city people attending and listening to a lecture by Prof. Hansen on his trips to Siberia and around the world in search of hardy fruits and grasses for the northwest. Prof. Hansen said among other things that to change the hardiness of a tree would require a period of ten thousand years.

The question of a place to hold the next annual meeting brought out several candidates, Deadwood winning out. People from the Black Hills were well represented and felt pleased to have the next meeting in the Hills.

Election of officers resulted in C. V. Gardner, of Piedmont, being chosen president, and Prof. N. E. Hansen, secretary.

The society's annual banquet was held Wednesday evening, and a very enjoyable evening was spent, listening to many humorous as well as instructive toasts.

The session Thursday forenoon was given over to papers on orcharding. Some favored cultivating the apple orchard for three or four years, then seeding to clover. The opinion seemed to pre-

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vail that commercial orchards are being planted too close for best results. The best results with plums seemed to come from thorough cultivation at all times.

Varieties of apples well spoken of were:

Wealthy, Duchess, Hibernal, P. Greening and others. Crabs: Whitney, Florence.

Plums: Wolf, Wyant, De Soto and a few others.

Strawberries: Warfield and Dunlap.

Raspberries: Loudon and Turner. The King was added to list for trial.

The Beta grape was recommended as safe to plant in any part of the state without covering.

Evergreens were discussed Thursday afternoon. Varieties recommended to plant were: Black Hills, White Douglas and Blue among the spruces and Ponderosa as the best pine for the prairie. Scotch pine was also well spoken of. The growing of evergreens is a perfect success on the prairies of South Dakota, when the right varieties are selected and proper care given.

In closing I wish to say that I enjoyed the meeting from beginning to end. The horticulturists of South Dakota are a sociable lot, and I hope to have the opportunity of meeting with them again.

NEW LIFE MEMBERSHIPS.—A goodly number of new names have been added to the life membership roll since the beginning of this society year. Six names were added at the time of the annual meeting, three of which, R. A. Schutz of LeRoy, A. H. Reed of Glencoe and T. E. Perkins of Red Wing are honorary members, made so by the action of the society. The other names added to the life roll to date are Geo. A. Wise, Moorhead; John Jager, Minneapolis; L. R. Waldron, Dickinson, N. D.; Wm. Saunders, Robbinsdale; Louie Wentzel, Crookston; F. G. Todd, Montreal, P. Q.; C. A. Pattridge, Sanborn; Rev. Mathias Savs, Delano. Twenty-eight life members in all were added to this roll last year.

ARE YOU SAVING APPLE SEEDS?—This means are you saving apple seeds to plant next spring in the prize contest. There should be thousands of trees grown from seed planted next spring for this purpose. If you select seed from choice, home-grown fruit, keeping as late as possible, the chances are very good that you will grow something of value even if you don't win one of the prizes. There is no more interesting pursuit than the growing of seedling trees with the pleasant uncertainty as to what character of fruit they may produce. Save seed from every good apple grown, keeping the different kinds separate. On page eighteen of the 1907 report, of which you have a copy, you will find a little note as to a good method to pursue in saving and caring for these seeds until planting time. This is one of the most important features of the work of the society.

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SECRETARY'S CORNER

ANNUAL MEMBERSHIP ROLL JAN. 25TH.—The annual roll of members in this society for 1908 on Jan. 25th stands at 1,158, which is 145 more than last year at the same date. This is a very satisfactory showing, considering the whole situation. We hope to maintain this rate of increase throughout the year, but whether we do or not depends upon the assistance of the members.

HAVE YOU SENT IN A NEW MEMBER FOR 1908?—Below is given a list of those who have sent in new members since the opening of this society year with the number contributed in each case. Is your name in this list? If not you should hasten and "make good" for one membership at least during the current year. The effort to increase the roll to 2,500 members this year will require an extra pull, but we can do it if we will. There is no such thing as failure with the Minnesota horticulturist.

AMERICAN BREEDERS' ASSOCIATION.—The annual gathering of this association was held in Washington, D. C., Jan. 28-30. Hon. Jas. Wilson, Secretary of Agriculture, is president, and Hon. W. M. Hays, secretary. There is a wonderful array of interesting subjects on the program, presenting quite a temptation to be present. Prof. Green, our president, will represent this society at that meeting, being in Washington at the time in attendance upon the annual meeting of the American Forestry Association. A report of one or both of these meetings by him should appear in our next issue.

DON'T LET YOUR MEMBERSHIP LAPSE.—Notwithstanding the roll is larger than ever before at this time of the year it is nevertheless true that an unusual number have had their names taken from the roll on account in part at least of the money panic we have been through lately. It isn't because they haven't the money, but because they are a little bit scared and haven't got over it yet. Don't let your membership lapse for any such reason. The work the Horticultural Society is doing is of too much importance to each individual member, to say nothing of the state at large, to make it a good policy to drop out. Now is the time especially to show loyalty.

DON'T FORGET THE SEEDLING APPLE CONTEST.—A year ago at about this time the society offered a number of prizes, seven, of $100 each, to be paid annually commencing with the year 1912, for seedling apples grown from seed planted not earlier than the spring of 1907, under certain conditions. This contest is briefly referred to in the little pink folder sent out by the society, but all of its conditions are noted in detail in a circular prepared expressly for that purpose, which may be had upon application to the secretary. Two hundred seventy-eight entries were made during 1907 in connection with this contest. As the prizes are to be awarded as late as 1918, ten years from now, selected apple seed should be planted by contestants for some years yet, as very much less than the time allowed from now till the awarding of the last prize is required to bring trees into fruitage. It is earnestly desired that every member of the society that can possibly do so should take part in this contest, the purpose being, of course, to bring into bearing a large number of seedling trees with the hope of securing the high

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grade of long keeping apples that the society so much desires. If the reader is not familiar with the conditions, please send at once for a copy of them and make preparations for spring planting.

HORTICULTURE AT THE FARMERS' INSTITUTES.—During the past two weeks Mr. Wyman Elliot and the writer have visited all three of the institute corps, which happened to be holding sessions at points near to Minneapolis. With each one of these corps is a lecturer on horticulture, all of whom are well known members of the horticultural society. Mr. R. A. Schutz, of Le Roy, is leading the southern corps and doing very efficient work for the horticulture of the state, as well as directly for the horticultural society. Mr. A. Brackett, of Excelsior, is with the second corps, and Mr. F. B. McLeran, of Wrenshall, is representing us in the northern corps. Very practical talks on horticulture are given on various branches of horticulture, mainly fruit growing, by all of these instructors, and at each appointment opportunity is offered for membership in the horticultural society for those who feel especially interested in this work, and at nearly every appointment some memberships are secured. The number of those taken at each institute corps since the opening of the season will be found noted in the list published below. Members of the horticultural society in the neighborhood of these institutes are urged to attend, and not only secure the benefit of practical instruction given but to assist by their presence, as well as by active service, in advancing the interests of the society and the work it represents.

LIST OF NAMES—of those who have sent in new members since the opening of the current year up to and including Jan. 25th.

A. K. Bush, Minneapolis, 1; H. A. Komstadius, Hoffman, 4; S. H. Drum, Waseca, 1; J. M. Gillitzer, St. Joseph, 1; E. A. Smith, Lake City, 1; Otto Kankel, Fertile, 2; E. Bonde, Cottonwood, 5; P. F. Tassie, Minneapolis, 2; Albert Robertson, Lake City, 1; J. N. Silver, Clarkfield, 1; M. C. Taubert, North Redwood, 2; Mrs. S. R. Spates, Wayzata, 1; L. Larson, St. Louis Park, 1; Tollef Tollefson, Hanley Falls, 1; Miss Gertrude M. Cairns, Ellsworth, Wis., 2; M. P. Afdem, Blooming Prairie, 1; And. P. Jensen, St. Louis Park, 1; C. E. Older, Luverne, 1; O. W. Moore, Spring Valley, 1; C. C. Hunter, Minneapolis, 2; S. Ellingson, Minneapolis, 1; Alfred Glyer, Forest Lake, 1; R. H. Pendergast, Duluth, 1; C. R. Rogers, Minneapolis, 1; C. J. Orton, Marietta, 1; A. A. Johnson, Winnebago, 1; Fred Trunk, Worthington, 1; LeRoy Cady, St. Anthony Park, 1; T. T. Bacheller, Forest Lake, 1; L. B. Arnold, Duluth, 1; Mrs. Jennie Stager, Sauk Rapids, 1; Wm. Anderson, Waseca, 1; Miss Gerda Wheeler, Sandstone, 1; A. V. Wright, Mine Center, Ont., 1; F. H. Boardman, Minneapolis, 1; Fred Cowles, West Concord, 2; F. C. Winkley, Minneapolis, 1; O. C. Chase, Fergus Falls, 1; E. Thomasson, Montevideo, 1; E. E. Grimes, Northfield, 1; W. T. McMurran, St. Paul, 1; Rev. A. Miks, St. Michael, 4; A. Cummings, Fairfax, 1; A. Wilwerding, Freeport, 1; F. X. Ferodowill, Wayzata, 1; Rev. M. Melinat, Ormsby, 1; Wm. Pfaender, Jr., New Ulm, 2; Mrs. Cutting, Carnegie, Man., 1; A. H. Reed, Glencoe, 1; John Bisbee, Madelia, 2; Chas, Haralson, Excelsior, 1; C. J. Hamnstrom, New Brighton, 1; O. H. O'Neill, St. Paul, 1; Minn. Rose Society, 33; So. Minn. Hort. Soc'y, 58; Minn. State Bee-Keepers' Soc'y, 37; N. D. Hort. Soc'y, 84; A. Brackett, Farmers' Institute, 58; R. A. Schutz, Farmers' Institute, 83; W. W. P. McConnell, Farmers' Institute, 17; F. B. McLeran, Farmers' Institute, 48.

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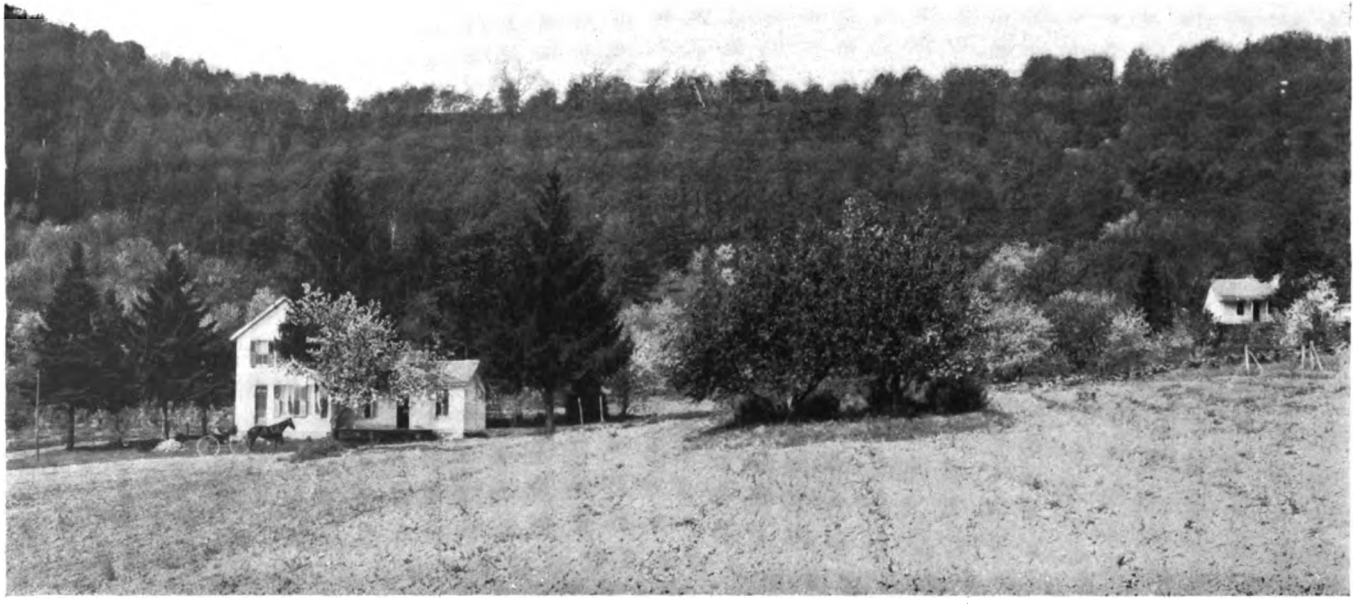

Home of F. I. Harris in foreground. The residence of his father, John I. Harris, deceased, appears at the right. Mr. Harris' large experiment orchard occupying the hillside above nearly to the summit, taking almost the whole breadth of the picture. See page 92.

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THE MINNESOTA HORTICULTURIST

Vol. 36 MARCH, 1908. No. 3

Central Trial Station, Annual Report, 1907.

SAM'L B. GREEN, SUPT., ST. ANTHONY PARK.

The last legislature provided us with a fruit farm at Zumbra Heights, and the work of the station in the breeding and management of fruits it is expected will be done hereafter at that place. The same legislature also provided us with opportunities for demonstrating our forestry work in Itasca Park, which will enable us to undertake such work on a scale somewhat commensurate with its importance. The principal work of the station in horticultural lines during the past year has been that of plant breeding, although considerable attention has been paid to variety testing.

Apples: Crossing work has been done with apples, and the following crosses have been made, and the seed from them removed and stratified for sowing this year.

Cross.	No.	Set. Fruit.	Remarks.
Duchess X Peter	12	3	
Patten's X P. Baccata	11	2	
Peter X N. W. Greening	17	11	Pollenated prematurely.
Peter X N. W. Greening	56	28	
Duchess X N. W. Greening	26	7	
Patten's Greening X N. W. G	34	8	
N. W. Greening X Peter	9	0	
N. W. Greening X Patten's G	8		Fell while young.
N. W. Greening X Duchess	6		Fell while young.
N. W. Greening X Okabena	23		Fell while young.
Martha X Whitney	16	0	Prematurely pollinated.
Martha X Transcendent	65	0	
Martha X Whitney	13	0	
Whitney X Transcendent	58	0	
Whitney X Martha	40	28	Most of these finally dropped.
Longfield X N. W. Greening	15	12	
University X N. W. Greening	42	12	
University X Peter	15	6	
Okabena X N. W. Greening	55	44	Mostly all fell small.
Hibernal X N. W. Greening	9	4	From premature pollination.
P. Malifolia X Duchess	11	3	Did not mature seed.
Soulard X Pride of Minneapolis	33	3	
Soulard X N. W. Greening	9	0	
Soulard X Patten's Greening	31	11	Soon fell.
Pride of Minneapolis X Soulard	22	5	One remained till July 10.
Soulard X Martha	10	3	
Soulard X Duchess	8	0	Prematurely pollinated.
Soulard X Duchess	12	20	
Soulard X Anisim	17		
Anisim X Duchess	3	0	
Soulard X Okabena	16	1	Soon fell.
Okebena X Soulard	7	1	Soon fell.

Note. In all cases pistillate plant is named first. All crosses with the Soulard came to nothing. The crop was a very light one, and the trees seem inclined to leaf rust.

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Horticultural experiment grounds, Minnesota State Experiment Station.

Strawberries: With strawberries the following crosses were made, the object being to secure plants of greater hardiness:

Cross.	No.	Set Fruit.	Remarks.
S. Dakota X Wild	9	0	
Alaska X S. Dakota	23	0	
Dunlap X Wild	..	6	
S. Dakota X Dunlap	36	7	Note.—S. Dakota is Hansen's cross of Manitoba and Jessie.
Margaret X Jessie	9	2	
Thompson's Ey. X Dunlap	11	10	
Sheppard X Dunlap	16	8	
Saskatchewan X Sheppard	1	0	
Sheppard X Wild	..	5	
Thompson's Ey. X Wild	15	2	
Margaret X Wild	11	8	
Seedling 9 X Alaska	8	7	
Bederwood X S. Dakota	13	11	
Seedling No. 9 X S. Dakota	17	19	(A mistake.)
S. Dakota X Jessie	19	16	
S. Dakota X Dunlap	13	4	
Alaska X Dunlap	15	0	
Jessie X S. Dakota	14	13	
Dunlap X S. Dakota	18	15	
Dunlap X S Dakota	14	10	Pollen 5 days old.
S. Dakota X Seedling No. 9	10	6	
Alaska X Seedling No. 9	7	0	
S. Dakota X Auto	15	3	
Lyon X S. Dakota	26	18	
Auto X S. Dakota	20	8	
Dunlap X Alaska	26	14	
Dunlap X S. Dakota	36	26	
Sample X S. Dakota	31	21	
Glen Mary X Alaska	17	13	
Glen Mary X S. Dakota	22	18	
Thompson's Ey. X Wild	..	8	
Margaret X S. Dakota	..	3	
Total	47½	281	

Note. Pistillate parent named first: Glen Mary X S. Dakota; there Glen Mary is the pistillate parent.

From the seed thus saved 550 strawberry seedlings have been grown and are ready for planting out next spring.

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Raspberries: The prime object in our work with the raspberries was to secure hardiness, but some work, such as crossing red with black and common red with strawberry-raspberry, was more in the nature of satisfying curiosity than for practical results. In order to secure pollen, the flowers were picked before they opened and placed in water indoors, and in this way best results were secured. When the flowers opened outside, the wind and insects soon dissipated the pollen.

Cross.	No.	Set Fruit.
Ironclad X Dr. Reider	61	46
Dr. Reider X Ironclad	36	28
Dr. Reider X King	18	9
Loudon X Reider	33	30
Sunbeam X Ironclad	12	6
King X Reider	..	10
Columbian X Sunbeam	16	10 (About)
Nemaha X Sunbeam	8	1 or 2
Strawberry-Rasp. X Black Rasp	19	
Strawberry-Rasp. X Rasp	3	
Strawberry-Rasp. X Loudon	6	
Strawberry-Rasp. X Columbian	6	
Loudon X St.-Raspberry	..	2
Dr. Reider X St.-Raspberry	..	2
Cumberland X St.-Raspberry	..	3
Haymaker X St-Raspberry	..	2
Total about	200	140 or about 70%.

Raspberries X Strawberry-Raspberry set small per cent. Strawberry-Raspberry X Raspberry set only one fruit.

Grapes: In crossing grapes we have aimed especially to secure hardiness and productiveness. This we thought would probably be most easily obtained by using Beta as a parent stock. One of the difficulties in crossing this variety or the Janesville with varieties of better quality, such as Agawam, Delaware, Concord, etc., is that the former flower perhaps a week earlier than the latter. I think the coming year we shall aim to get these varieties in flower at the same time by covering the Beta and Janesville and allowing them to remain covered for a few days after we uncover the Agawam, Concord, etc. Eighteen clusters were obtained as the result of this crossing work.

Plums: It was our intention to do considerable crossing work between the Japanese and American plums, but we found that the fruit buds on the Japanese kinds at Lake City, where we were to do this work, were all destroyed last winter. Crossings were made between some of the better varieties of the hardy kinds but failed to set well.

Some crossing work has also been done with pæonies and roses.

Potatoes: A large number of varieties of potatoes and little known Solanums were utilized for crossing work with potatoes, last year's work showing the small amount and poor quality of pollen on

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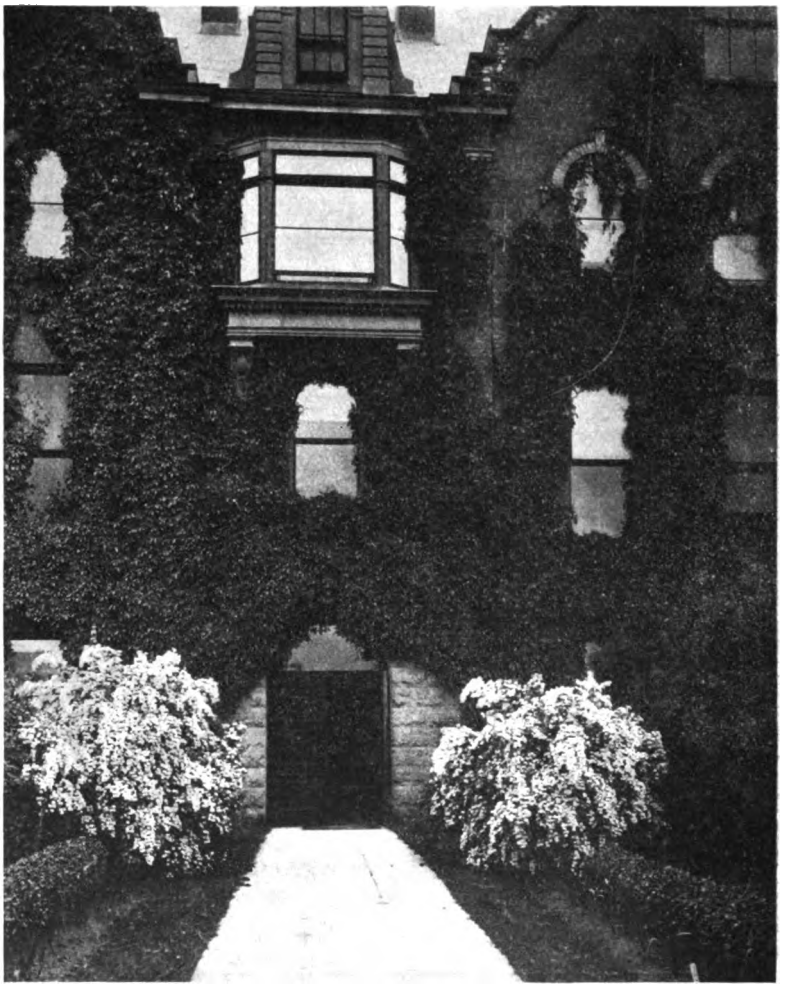
most varieties. The object of this crossing work is to obtain varieties of potatoes that have greater disease resistant qualities than those now grown, and as preliminary to this work it has been thought de-



Front entrance, Horticultural Building, Minnesota State Experiment Station and Agricultural College.

sirable to make a study of the reason why potatoes failed to set fruit as abundantly as they did in former years. In all, 5,265 potato flowers were worked on and the results carefully tabulated and seed saved for sowing another year.

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Glencoe Trial Station, Annual Report, 1907.

A. H. REED, SUPT.

In this, my third, annual report of the Glencoe trial station, the following is a summary of the fruit and crop conditions of this vicinity for the season of 1907, which I think will prove true for McLeod county and for the central portion of the state west of the so-called "Big Woods."

Apple crop abundant, by far the largest ever produced in the county. Plums, none, neither wild nor tame, except the Compass Cherry plum, which produced about half the usual crop. Cherries, none; strawberries, a fair production; raspberries, but few; blackberries did not fruit; grapes fruited in special localities.

The grain crop was disappointing, wheat and oats about two-thirds of the usual product. Corn planted as late as June on high, rich ground, well cultivated, ripened before first frost, which occurred Sept. 25th.

An abundant yield of potatoes of fine quality. All other vegetables yielded well.

Owing to the cool, wet weather throughout April, May and June, the season for fruit blossoming was three weeks later than usual, as apple trees were not in full blossom until June 4th and plum trees about the same time. A heavy frost occurred the night of May 27th, which froze ice and probably killed all the plum blossoms. The apple trees were not in full blossom and were thus saved from injury, and a heavy crop followed.

The past season's apple crop has given an impetus to orchard planting, and we may look to see more apple trees planted in 1908 in Minnesota than in any year before.

There has been no apple tree blight the past season, which indicates that the professor's bugs are all dead.

Each year adds to my admiration of the Hibernal apple tree as a producer. In my orchard of two hundred trees, set in 1900, my twenty-five Hibernals have borne profusely four seasons, and the past season the heaviest of all. The fruit is excellent for cooking, rather sour for a popular eating apple, a strictly fall apple, and in its prime in October and November. Its propagation should be encouraged throughout Minnesota, as it will produce its value over and over again while many other varieties are coming into bearing.

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Three year old pear trees that survived the winter of 1905-6, without extra care, froze back last winter to within six inches of the ground but have sprouted up and made a good growth the past season.

Mice during the past winter proved a much greater pest among my apple trees than rabbits ever did, especially among small trees where the grass had been allowed to grow close to the tree and not mulched. In nearly every instance the tree was girdled close to the ground and killed.

The catalpa as a lawn and shade tree is fast coming into favor, as it is proving hardy and makes a beautiful shade tree and when in blossom is a "thing of beauty." It is easily propagated, as it has fibrous roots and is a rapid grower. It is claimed that the wood makes valuable railroad ties at eight to ten years' growth.

The President: I am glad to hear the Captain talk about the Hibernal apples. You don't want to forget your old friends. Some say it is of desperately poor quality, but when you have nothing else it will do very well. For pie or sauce the Hibernal is pretty hard to beat.

Prizes Awarded at Industrial Contest.

The following is a list of the prizes awarded on apples at the Minnesota Industrial Exhibit, made in connection with the annual meeting of the Minnesota Educational Association in Jan., 1908. These prizes were paid by this society.

Name.	County.	Variety.	Premium.	Amt.
Cecil Burch	Olmsted	Wealthy	First	$3.00
Ruth Conrad	Rock	Wealthy	Second	2.00
Mabel Stoppel	Olmsted	Wealthy	Third	1.00
Homer Benjamin	McLeod	Patten's Greening	First	3.00
Glenn Benjamin	McLeod	Patten's Greening	Second	2.00
Charlie Frost	Olmsted	Patten's Greening	Third	1.00
Lura Ostrem	Olmsted	Northwestern Greening	First	3.00
Henry Halvorson	Waseca	Northwestern Greening	Second	2.00
Arnold Hampel	Olmsted	Northwestern Greening	Third	1.00
Chester Bigelow	Olmsted	Seedling	First	6.00
Chester Bigelow	Olmsted	Seedling	Second	5.00
Willie Odenthal	Pine	Seedling	Third	4.00
Anna Hedlof	Douglas	Crabs	First	1.00
May Cummings	Pine	Hibernal	First	3.00
Ruth Conrad	Rock	Hibernal	Second	2.00
Burt Richardson	Olmsted	Hibernal	Third	1.00
Smith Searles	Olmsted	Longfield	First	3.00
Mabel Stoppel	Olmsted	Pewaukee	First	3.00
Ruth Willis	Waseca	Peerless	First	3.00
Ruth Conrad	Rock	Peerless	Second	2.00
May Cummings	Pine	Peerless	Third	1.00
Ruth Conrad	Rock	Wolf River	First	3.00
Matilda Fratzke	Waseca	Wolf River	Second	2.00
Smith Searles	Olmsted	Wolf River	Third	1.00
May Cummings	Pine	Col. of Apples	First	5.00
Homer Benjamin	McLeod	Col. of Apples	Second	3.00
Willie Odenthal	Pine	Col. of Apples	Third	2.00
Ruth Conrad	Rock	Col. of Apples	Fourth	2.00
Total				70.00

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Jeffers Trial Station, Annual Report, 1907.

DEWAIN COOK, SUPT.

The season of 1907 gave us an abundant apple crop; otherwise it was an off year for the fruit grower.

The apple scab fungus did a great deal of damage, destroying all of the fruit on nearly everything in the crab apple line. The exceptions noted are the Whitney No. 20 and Locusk Winter—the Early Strawberry also was not affected by the scab to any extent.

The crab apples, some of them, had a good deal of misshapen fruit, presumably due to the stings of the plum curculio. This injury only showed on fruit from very old trees or else fruit from trees that grew upon low, hard-baked land. Hence we are of the opinion that fruit on trees growing under favorable conditions entirely outgrow the injury from stings of this insect. The larger apples showed no injury from this insect whatever.

We had considerable of the fungus known as the "ripe rot" upon our early apples, especially on the Duchess, but owing, no doubt, to the cooler weather that prevailed at the time when the fall and winter varieties were maturing they were nearly free from this fungus. However, the Patten's Greening had quite a bit of it but not as much as is usual here with that variety.

The Yellow Transparent from a commercial standpoint proved to be our most valuable extra early apple. The Tetofsky scabbed badly and was too small. The Blushed Calville also scabbed badly. The trees of this variety for some reason are failing with us, and we do not consider it of much value.

The Lowland Raspberry is a good tree but not a heavy bearer, but the fruit ripens so early and is of such fine quality that it certainly has a value for home use if not for market. We have one tree of this variety which we set out twenty-one years ago.

The Duchess as usual was the most productive and the best selling apple of its season. The Wealthy bore heavily on many of the trees, while other trees of this variety bore only a scanty crop. These are now full of fruit buds for another season's crop.

The Antonovka has this season as usual given us a fine crop of nearly perfect fruit. It proves to be an annual bearer of large, straw-colored apples which have always been free from scab.

We also got a large crop from our Hibernal trees of large sized apples that were free from scab, but for some reason or other the more the people bought of the Hibernal the less they wanted of them.

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One tree of the Jewell's Winter, planted the spring of 1893 (as one of the Thompson seedlings), bore about three bushels of medium sized apples. The tree is slender and not a strong grower, and was barely able to carry that amount of fruit. The fruit was free from scab, and the tree appears hardy.

One tree of Scott's Winter, set the spring of 1894, bore about six bushels of apples, which were below the medium size but were free from scab. This tree also bore a fair crop the season of 1906. The tree is vigorous.

The Okabena bore a very heavy crop and free from scab. On these overloaded trees much of the fruit was undersized.

The Peerless set fruit freely, but it scabbed so badly that it was worthless for market purposes.

Evergreen screen at Dewain Cook's Trial Station

The Patten's Greening gave us its usual amount of fruit. One tree, set the spring of 1894, bore eight bushels. We sold the product of this tree for twelve dollars. The foliage of this variety is rather susceptible to the apple scab fungus, and the fruit to the fungus known as the ripe rot.

Other varieties of apples not enumerated above that bore a good crop of fruit, free from scab, we mention as follows: Gideon, Northwestern Greening, Lou, Arisim and the Breskovka. The latter variety is only of medium size and has to be sold in competition with the Duchess and at a discount. The Charlamoff bore a fairly good

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crop, better than usual with us. The fruit was of uneven size and there was some scab, but as the fruit averaged large and was of such fine quality it found a ready sale on the market.

The plum crop was almost nothing; the only pure Americana kind that produced anything like a crop was the Paul Wolf; but we had two varieties of Japanese hybrids, the Eureka and the Emerald, that were very full. We have had these two varieties in bearing for several years, and they have so far borne a good crop each season regardless of what the Americana varieties do.

We had the usual amount of plum pockets, plum curculio and plum rot to still further reduce the plum crop, while the shothole fungus on the foliage prevented the fruit from getting its usual size.

The Emerald is larger in fruit than any Americana variety and is a very heavy bearer, the trees being hardly able to carry the fruit, but when grown in a sheltered locality it is much subject to the plum rot disease. The season of this variety is late. The Eureka is an extra early variety, fruit of large size but not as large as the Emerald, not much subject to the plum rot and is the most promising extra early plum that I know of. We have several other Japanese hybrid plums that we hope to be able to report upon another season.

We added to this station last spring the usual number of new varieties of fruits, among which are the following: Sunbeam raspberry, South Dakota No. 3 sand cherry and that new apricot sand cherry, South Dakota No. 7. These were contributed by Prof. N. E. Hansen, of the S. D. Experiment Station.

Mr. A. B. Lyman of Excelsior contributed his Evelyn and his Perfect apples.

Mr. Jas. Wood, of Windom, furnished us with the Delicious, Milwaukee, Schaffer, Iowa Beauty and several other varieties of apples, also with several varieties of his new seedling plums, and also with his new seedling black raspberry.

Fruit trees are going into winter quarters in good condition, and there is plenty of moisture in the ground. In raspberries, the King red raspberry, sent me from the state farm the spring of 1905, seems fairly hardy of cane but is quite susceptible to the disease known as anthracnose. This variety has not given satisfaction.

The Cuthbert that are growing so as to be exposed to the west winds kill to the ground about every winter, but that variety where growing in sheltered places and without cultivation rarely winterkills.

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The Turner and the Brandywine are doing fairly well. The Superb is of rather drawf growth of cane and is very healthy. Fruit large and firm; ripens rather late. It gave us the best satisfaction the past season of all varieties of raspberries that we are growing.

Evergreens of most kinds are doing finely. We have but little trouble with any of them through winter-killing. The white pine we discarded some years ago. The hemlock spruce makes only a feeble, slender growth. The silver cedar also does not show very much vigor. The Scotch pine, Austrian pine, white spruce, black spruce, balsam fir, the blue and silver spruces (Picea pungens), Black Hills spruce and also the Norway spruce—where it has some shelter when young—are all apparently doing as well as though they were native here.

We are growing many varieties of fruit like the White Astrachan, Juicy White, Duchaveo, etc., that we do not report upon, as they are not prominently before the public and have proved so worthless. We consider it best to let them go without mention.

Mr. Dewain Cook: Most of you know that my trial station is established or located in the southwestern part of the state, in Cottonwood county. The soil is a black loam and contains considerable alkali, and it would generally be considered a rather unfavorable location for fruit growing. There has been no general winter-killing in the past winter, and I do not know of any variety that killed out, and I do not know of any that were killed back. We have not been in the habit of spraying our trees, and I suppose as a result we have nearly all the diseases that fruit in this country is subject to. There are a great many apples that are scabbed and a great many varieties that are free from scabs. We are quite interested in plums, as most of you know, and have turned our attention to the Japanese hybrid plums and are pleased with the result. Most of them are hardy enough and part of them seem to be more productive than our native. They set fruit buds on the new growth and seem to bear better than our native varieties—that is, at least part of them. (Applause.)

Mr. Clarence Wedge: I would like to ask what a few of the hybrids are that he refers to.

Mr. Dewain Cook: A few of the hybrids have not given really the best satisfaction, but we have quite a few that have not fruited. We fruited two or three varieties, and last spring we tried top-working. Those I have especially referred to are the Eureka and the Emerald. The Eureka is an extra early plum; it does not seem to rot much and is perfect inside. The Eureka is a large plum and an immense bearer, but it rots badly, and I presume it ought to be planted where it is not exposed. The Eureka is the best I know of.

The President: What do you top-work them on?

Mr. Cook: Some on the native plum and some on the different varieties.

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The President: Just the ordinary native plum?

Mr. Cook: Yes.

The President: The trees you referred to as being set out in 1905 and top-worked, are they those on the pyrus baccata?

Mr. Cook: Yes.

The President: Any difference in different varieties?

Mr. Cook: I do not think there was.

The President: Your report is not so different from those received from other places. Did they all live?

Mr. Cook: I think most of them lived.

The President: Are they healthy?

Mr. Cook: They look that way to me.

Mr. Thomas E. Cashman: How did you plant those trees?

Mr. Cook: According to directions, twelve inches deep.

Mr. Cashman: We also received some and planted them some twenty-four inches and some twelve inches, and I found those that were planted twenty-four inches did the best. All the trees are in good condition. I think you should plant the trees deep in clay soil.

The Strawberry-Raspberry—A Discussion.

Mr. J. F. Benjamin: I raised quite a lot of the strawberry-raspberry and could not supply the demand. I had two rows four rods long, and they did not bear so many at a time, but they kept right at it. The largest picking we had was from sixteen to eighteen quarts, but we could not pick that many every day; they bore from the time raspberries began till October. We liked them very well.

Mr. C. H. Brady: Mr. Wilfert raises a great many strawberry-raspberries, and I believe he makes more out of them than he does out of anything else he raises. He can sell all he grows at 10c a quart, and the people pick them themselves. I sold them at $1.60 a crate. They are used for putting up in cans. I sold all I raised, and I could have sold a good many more if I had had them.

Mr. W. J. Moyle (Wis.): There is one phase of this subject that has not been touched upon, and that is the possibility of making the strawberry-raspberry fruit on the ground. If it were possible to so regulate its growth as to be made to fruit on the ground, it would do away with the cane and all the fussing with pruning and covering, but so far as making any money out of the strawberry-raspberry is concerned, that is all nonsense.

Prof. Green: Well, hold on there, there are three or four here who say it is the other way. The financial value of a thing, that is what we are after.

Mr. S. D. Richardson: All the experience I had with it was that I was at a man's place at Valley Centre, and he had some growing in his garden. I admired them, and he said if there was a man against whom he had a particular spite, he would give him the strawberry-raspberry.

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La Crescent Trial Station, Annual Report, 1907.

F. I. HARRIS, SUPT.

The season of 1907 will go on record as "the latest ever." A short, mild winter, followed by a backward spring and cold, wet summer, put the ripening season back about three week later than the average, but a dry, pleasant fall extended the season so that nearly all varieties of fruit finally matured. The earliest strawberries were not ripe till June 25th, and the result was that it proved a very short season and the yield not above half a crop on new beds, while most of the beds were hardly worth picking. The quality was fair, however, and on account of a like failure in the south the market was exceptionally good, and it proved a case where "the half was better than the whole." Warfield and Senator Dunlap are grown exclusively for market, and nothing new has proved superior in yield and shipping quality.

Raspberries were also very disappointing in yield, but of good quality and in big demand at high prices, Cuthbert proving best commercially.

Black caps were nearly a failure, currants a light crop and gooseberries a heavy one.

Blackberries where winter protected set a full crop, but at the last end were inferior in quality but sold well. Ancient Briton only variety grown extensively.

Grapes were loaded with a record crop, but owing to extréme lateness of the season only the early varieties ripened, and the bulk of the crop was picked in a half ripened state and sold at a fair price for canning and wine. These were mostly Concords, and they were mostly gathered between Oct. 5th to 10th, just about one month later than usual. Campbell's Early and Worden ripened before frost and proved money makers.

The plum crop was again an entire failure. Only one pear tree bore fruit, and a couple of plates I exhibited at the state fair were the only ones shown there.

The apple crop proved a bumper one, and the quality was above the average. The most profitable varieties were Wealthy, Duchess and Okabena, but Longfields yielded a heavy crop and sold readily. In fact, owing to scarcity of other fruit, everything went, and even Hibernals were in demand at record breaking prices. The fruit from one old, half dead Red Astrachan tree sold for $5.00, and one seedling netted $20.00.

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The main orchard was sprayed three times with bordeaux mixture and paris green, and the result was more than 75 per cent of No. 1 fruit. Fifteen hundred bushels of apples were sold besides all that could be used and given away.

The experimental orchard was planted 12x30, with a row of plum trees set between each two rows of apple, and they began to be crowded for room. After waiting in vain for a crop of plums or apples either, the plums were removed in the spring of 1905 after the blossoms had blighted. This gave room for light and air to circulate and also a chance to spray, and while only one thorough application was made this season over 250 bushels of marketable apples were gathered where nothing salable was ever raised before. Over seventy-five varieties bore in this orchard, and many of them are worthy of general cultivation, but owing to my absence from home during most of the picking season I was unable to save specimens for an exhibit at the annual meeting. Among many more or less desirable varieties I want to again call attention to the Nelson as the best early eating apple in its season. A commercial orchard of 1,000 trees, all Wealthy, has been planted during the last four years, and a few came into bearing this year, producing from a peck to half a bushel each of perfect apples.

On the whole, fruit growing has proved more of a success than expected in spite of adversities by wind and flood. The trees are in good condition for another year and hope is in the air. During the last year a half dozen new orchards of 1,000 trees each have been planted in this vicinity, and Minnesota will soon be able to supply the home demand for apples and have some for export.

Mr. A. J. Philips (Wisconsin): This is a son of John. (Applause).

Mr. F. I. Harris (La Crescent Trial Station): I wish to thank you for this expression of estimation in which my lamented father was held.

Soil and Manure for Celery. I used for my celery (home supply) an old strawberry row, about two hundred feet long, which had received very heavy dressings of rich stable manure repeatedly during two or three years. The plants and weeds were plowed under, and good strong plants set in a slight depression. As the soil was extremely dry, and rain failed to come for some weeks, many plants died and had to be replaced. I kept on planting, however, until I had the full stand that I wanted, and rains set in to help them along. During all this time, however, all the ashes from the cook stove, part from coal and part from wood, were carefully saved and spread along the row on each side of the plants a distance of about a foot.—Anon.

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Montevideo Trial Station, Annual Report, 1907.

LYCURGUS R. MOYER, SUPT.

No new material was sent out by the society to this station for trial this year, so that this report will be confined to such varieties as have already been under cultivation for a considerable length of time.

Kentucky Coffee Tree: "This unique tree," to use the words of A. J. Downing, "seems to have been naturally distributed throughout the Central States, from New York and Pennsylvania to Kansas and Nebraska, and from Michigan and Minnesota to Tennessee and Arkansas; but it is nowhere common. Its generic name, Gymnocladus, alludes to its naked branches, which in winter are destitute of twigs. It received its specific name, dioicus, from Linnæus, and its combined name, Gymnocladus dioicus, from Koch. It is called Gymnocladus Canadensis by some writers." Nearly sixty years ago Downing called attention to the beauty of its foliage and said that it was entitled to a place in every collection. It was introduced into cultivation in England 160 years ago, where it was considered an object of curiosity and beauty. In some parts of our own country it is called the stump tree from its habit of dropping all its twigs with its leaves in the fall. This tree was observed in this state by Winchell in Dakota County, by Miss Manning at Lake City, by Lieberg in Nicollet County, by Juni at New Ulm, by Upham at Sleepy Eye, by Sheldon at Waseca and Madison Lake, and by Lyon and Wheeler in Houston County. The Kentucky coffee tree has been under cultivation at Montevideo for about sixteen years, where it fruits freely. It ought to be planted freely throughout the state, as it would add variety and beauty to our timber plantations.

Rock Elm This tree, which is known as Ulmus racemosa of Thomas and as Ulmus Thomasi of Sargent, is reported as common in the Eastern States, but is rather rare in Minnesota. Lyon and Wheeler report it as infrequent in Houston County. It has been observed in Nicollet County by Aiton, in Blue Earth County by Lieberg, at New Ulm by Juni, and is common at Granite Falls and Montevideo, growing on rather dry bench lands, and around the edges of archaic rocks, which cross the Minnesota valley at these places. It has been planted at Montevideo as a street tree with success. The rock elm in cultivation forms a symmetrical, round-topped tree, with very dense foliage. The cork wings which form on its branches give it a rugged appear-

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ance in the winter, approaching that of the bur oak. It does not seem to have been known to Loudon, and Downing appears to have thought it to be a variety of the English elm. It ought to receive more attention from our planters, as it seems likely to thrive in soil too dry for the white elm.

Pines: A single specimen of Scotch pine (Pinus silvestris) has been in cultivation at the station for about twenty years. The tree has reached a height of about twenty-two feet, and the top has become very open, showing some dead twigs. One would conclude that the tree is not very well adapted to our climate were it not that photographs of the tree as it grows in its native European habitat shows the same open top. The tree is of too open and straggling a habit to be suitable for lawn or park planting unless the grounds are very large. Indeed Loudon, writing from an English point of view, says: "When planted in narrow belts around fields for shelter it soon becomes unsightly unless the trees stand so thin as to allow them being clothed with branches from the ground upward." Several thousand seedlings of Scotch pine were planted at this station for forestry purposes about twelve years ago and are still making a remarkable growth. The wet seasons we have been having for the past two years seem to have been especially favorable to them. Quite a number have been planted on the open prairie at Camp Release Park.

The Swiss Mountain Pine (Pinus montana) has been growing at this station for about eighteen years and is still a very thrifty, round-topped shrub of much ornamental value. The Germans call it the "crooked-wood tree" from the fact that it has no proper trunk and that all the branches are crooked. It seems to be as hardy as Pinus ponderosa scopulorum, a tree that has maintained itself in the Black Hills of Dakota and in the sand hills of Nebraska for ages.

Bolle's Poplar: Architects and landscape gardeners frequently desire to accentuate the sky-line as shown over a plantation by introducing some tall-growing, narrow headed tree, and the Lombardy poplar is frequently used for this purpose, although it is very subject to the attacks of insects and not entirely hardy in this climate. Bolle's poplar, known to systematists as Populus alba bolleana, ought to be used instead. It has been on trial here for about fifteen years, and seems to be free from the attacks of insects. It was introduced into Europe in 1875 from Turkestan, a country with a climate much like western Minnesota. The tree has dark green leaves, silvery-white and cottony on the lower surface, and is a conspicuous object in any plantation. It was named for Dr. C. Bolle, a tree planter.

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Oleaster, or Russian Olive (Olæagnus angustifolia) was introduced into cultivation in England more than 250 years ago, but it was not known how well it was adapted to planting in dry localities until the Russian form of the shrub or tree was brought to the Northwest along with Prof. Budd's importation of Russian apples. Trees planted in tough prairie sod in the cemetery at Montevideo have made a remarkable growth. It was at first thought to be a shrub and was planted along with other shrubs here at the station to mask the rubble stone foundations of the dwelling house.

Residence of L. R. Moyer, Montevideo.

(N. B.—The engraver cut this picture down too much to show well all the shrubs Mr. Moyer speaks of here.)

The planting of this shrub border was one of the mistakes due to youth and inexperience, as many of the shrubs are of too rampant a growth to produce the effect intended, which was to connect the house and lawn together and make them seem part of the same picture. The large tree at the northwest corner of the house (the left hand side of the picture) is an American elm. In front of the west gable, and nearly covering the double window in the second story is the oleaster. Next to it coming toward the front of the house is a Charles X lilac, then a flowering almond (prunus nana), a Persian lilac, caragana pygmae, lonicera media (at the end of veranda), a "Russian" lilac (at the corner), behind it and standing somewhat

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higher caragana arborescens, then a group of caragana frutescens, then a climbing honeysuckle supposed to be lonicera flava, then potentilla fruticosa. lycium vulgare, and next to the front door caragana arborescens. At the right hand corner of the veranda is a Tartarian honeysuckle. The lilacs, the bush honeysuckles, and the oleaster are too large growing for this location, and it would be better to replace them with dwarf juneberries, rosa rugosa and caragana pygmae. It would seem too that berberis thunbergii would be an ideal shrub to set in such a location as this.

The American Plum: The ravages of curculio and the attacks of fungoid diseases have again made the plum crop a failure, in spite of repeated sprayings. Good wild plums were raised in this part of the state when the country was new, but the advent of civilization has apparently introduced new pests and destroyed the balance of nature, so that the wild plums do not fruit any more.

Apples: There was a fair apple crop in this neighborhood, but the fruit was all small. Blushed Calville was later than usual and ripened only a few days before Oldenberg. Anisette seemed to be a few days later than Oldenberg, of rather better quality and a little smaller. Peerless produced a fair crop, ripening with or a little after the Wealthy. It needs a sheltered location like the Wealthy, as the fruit drops from the trees badly. We find it a pleasant eating apple, not so sharply acid as the Wealthy. Esteline was no larger this year than the Anis and not of so good a quality. However, it yields far better. Okabena came into bearing, but the fruit was disappointingly small. Simbrisk No. 1 is as large as the Hibernal and of rather better quality. It yields well, but in some years shows symptoms of blight. There was no blight on any of the trees here this year.

Judge L. R. Moyer: The Montevideo Trial Station, as you know, was established for the purpose of making trials of flowers and ornamental stock. We have not much fruit to work with, and most of our work is with shrubs and lawn and border plants. The station is supplied with horticultural and botanical text books, and we make an effort to get the proper name for such stocks as are supplied for trial.

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Owatonna Trial Station, Annual Report, 1907.

THOS. CASHMAN, SUPT.

The trees at the Owatonna Trial Station came through the winter of 1906 without injury, except a few that were top-grafted in the spring of 1906. It appears that the man who did the work overdid it on a few of the trees, cutting off and grafting all the branches, thus weakening the trees to such an extent that they will probably die. Where one or more limbs were left, the trees were not injured in the least, and the scions made a splendid growth. This is a pointer for beginners: the main branch of the tree, or, in other words, the leader, should not be cut, at least not until after the first year after the side branches are grafted, as the shock is too great when the top is all cut off at the same time. This work was done on the thrifty Hibernal and Duchess, and these varieties are able to stand as much rough usage as any grown. Where the work was done properly, the scions made a splendid growth, and all came through last winter without injury, including the Jonathan, Ben Davis and Salome.

The apple crop at the Owatonna station this season was just fair, and the hail storm gave what there was very rough usage. We sprayed the trees at the station twice this season, which I am satisfied would have given us a clean apple crop if it had not been for a large adjoining orchard which has not been sprayed for several years to my knowledge. The pests from the careless man's orchard, if near by, are very troublesome.

This year's apple crop was turned over to the State Public School, but they did not take nearly all the fruit raised, and a considerable portion of it rotted on the ground.

The twelve trees budded on Pyrus baccata stock at the crown, sent to the Owatonna Station in the spring of '05, with the exception of two that died the first summer—which were replaced with Peter budded on Hibernal—have all made a very satisfactory growth and are in a very thrifty condition. The branches have each made a growth ranging from twelve inches to three feet this season. The most promising varieties at the station that have come into bearing are as follows: F. G., A. A., P. V., Nos. 90, 32, 14 and Great Duchess, Phoenix No. 50.

These varieties are all on exhibition in the horticultural hall during this, the horticultural meeting, and many other varieties with them. They have been kept in an ordinary house cellar with no particular care, and their keeping qualities can easily be determined.

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I have nothing to report in regard to the old varieties except the Northwestern Greening. The past three winters have demonstrated that this variety is not hardy enough. The new varieties originating at the station give great promise, the majority of them are fruiting, and the outlook is certainly good. The trees are extremely hardy, the fruit is of fair quality, keeping up to this time and later, and I think a good many of the varieties will certainly be worthy of attention on the part of growers. I believe I reported a year ago that all the ground at the station suitable for planting is fully occupied, and very little can be done there except to test what we have now planted, which will probably take four or five years. A few varieties have not come into bearing, but those that have come into bearing are among the best. (Applause).

Pleasant Mounds Trial Station, Annual Report, 1907.

J. S. PARKS, SUPT.

The past season was a prolific one in the apple orchard—the heaviest crop ever raised here. Plums were an entire failure. The only plums raised were a few on some two-year top-worked grafts—out of forty varieties grafted.

This season of heavy apple crops has demonstrated the care that should be exercised in selecting trees for planting, and the care in pruning afterwards. In my early planting all trees that came into my hands were planted without regard to shape and crotches, and the pruning later was neglected, so that this year heavily loaded trees were split and broken wherever a crotch or weak place gave a chance for breakage, and many large trees were entirely ruined.

Other trees as well as fruit trees have found those weak places. A large catalpa tree twenty or more inches in diameter, with a crotch in the top, loaded with seed and big leaves, split and is ruined. A large Kentucky coffee tree, loaded with seeds, went to pieces in the same way.

All this trouble could have been avoided if taken in time and the trees properly pruned.

We have a few seedling trees fruiting this year from seed of Wolf River that grew on limbs interlocked with Talman Sweet trees adjoining and supposed to be fertilized with the latter. The fruit shows our calculation was correct, but it is not satisfactory. The apples are about the size of the Talman Sweet, but sour and have the appearance of being a long keeper. So thus far nothing is gained unless a hardier tree is found than the Talman Sweet.

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Sauk Rapids Trial Station, Annual Report, 1907.

MRS. JENNIE STAGER, SUPT.

Our fruit trees came through last winter in good condition with the exception of one tree. We have had no blight in our apple orchard: the apple crop was large for the amount of trees we have. The most prolific of the large kinds were the Duchess, Patten's Greening and Wealthy. Sweet Russet and Martha crabs also bore very heavily. As for plums, although loaded with blossoms in the spring, there was no

Mrs. Jennie Stager and her residence, Sauk Rapids, Minn.

fruit on account of a very heavy frost which came when they were in full blossom. The Compass cherry also gave us no fruit this year. Black raspberries were also a failure, but we had a fair crop of Turner, Columbia, Cuthbert and Golden Queen. We never give winter protection to our red and yellow varieties and have never lost crops by failing to do so. With the exception of Janesville we had no grapes. Our strawberries gave us a good crop, Warfield, Bederwood and Brandywine bearing the heaviest.

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Our soil is clay with a little sand. We had neither currants or gooseberries this year.

The Pyrus baccata apples, sent by Prof. Green, made a good growth, but three of them were blown down and broken by a heavy wind, which also destroyed about a dozen of our larger apple and plum trees. Almost all of our other shrubs and perennial flowers, although late in bearing, did exceedingly well. We have had very heavy rains through the late fall and are hoping for good results next year.

Our fruit this year has been doing remarkably well, a good many kinds. Strawberries were plenty, and as prices of all fruits have been high we did very well. Our apples were so heavily loaded we had to thin them out, and even at the end of the thinning they were a sight to be seen. The varieties that did the best with us were the Duchess and the Patten's Greening, and we had some very nice crabs, the Martha, that did very well this year. Our raspberries did remarkably well.

Of the plums there were only two trees in the whole orchard that bore. The De Soto up there does not seem to do as well as the others; the Surprise did well, but the De Sotos seemed to be loaded and rotted very quickly. It never did as well as the others. We had peonies in blossom, seven hundred at one time, and I furnished the Minneapolis florists with flowers, and they were really a sight to behold. We had people from St. Cloud and from all the surrounding country come to see the flowers. We had seven hundred in bloom at one time, and some plants had as many as twenty blossoms on one individual plant. Almost everything did very well with us except the plums and the grapes; we did not have any grapes.

The President: Do you mean to say you had seven hundred peony blossoms at one time?

Mrs. Stager: There were seven hundred plants that were in bloom at one time.

Most of the celery found in our markets is of the self-blanching class. White Plume is much in evidence. Of all celery varieties, its culture probably offers the least difficulties to the unskilled grower. It is the thriftiest grower of this class of celeries, and is easily blanched by means of boards. But I don't like it for my own use. It is not good enough. Golden Self-Blanching, although more nearly dwarf in growth, is much better in quality. If kept free from blights it is quite good even if blanched under boards, and very good later in the season when blanched by earthing up. The stocks being shorter than White Plume even, although often more compact, extremely high banking is not required.

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West Concord Trial Station, Annual Report, 1907.

FRED COWLES, SUPT.

The spring of 1907 being cold and backward made the season seem very short. Fruit trees came through the winter in good condition and blossomed well, but the cold winds seemed to be too much for them.

Propagating strawberry beds at Fred Cowles.

The strawberry plants that were uncovered early were hurt some by the freezing and thawing, but where covered until late in the season gave a good crop, and as prices were good the strawberry crop paid well. I still think the two old standbys take the lead for market, for home use and for dollars and cents. Warfield and Dunlap are hard to beat. I use a few rows of Enhance, as they blossom a little later and are a good fertilizer for the late blossoms of the Warfield.

The raspberry crop was very good. We fruited the Iron Clad for the first time and like it very much. The King gave us a good crop with no winter protection. Older is the only black raspberry that we have tried that is worth bothering with, as it bears well without covering.

Currants bore well, especially the Victoria. Gooseberries were a good crop also.

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Our grape crop was never larger, but the season was not long enough. The Moore's Early was the only variety that ripened all of its fruit. Part of the Worden got ripe, but very few of the Concord. We sold most of them green for jelly.

The plum crop with us was poor and has been for the past three seasons, with the exceptions of the Wyant, which has borne heavily each year. We think this a delicious plum. What shall I say of the Surprise? I know that it is a delicious fruit and a good tree, but I haven't been able to get much fruit. Perhaps when we get a good plum year, the Surprise will surprise us.

The apple crop was not a large one with me, but in this vicinity it was very good. I like the Patten Greening more each year, the tree is so hardy and a good bearer. Although it is a crooked tree in the nursery row, it makes a fine orchard tree, and it bears fruit. I visited the original Patten Greening tree this summer. The old tree was well loaded with fruit and was sound and healthy.

The Wealthy at my place was a poor crop, but as a general thing in our vicinity they bore well. The apple trees that I received from the central experiment station set two years ago, are all doing nicely. Several blossomed this year but had no fruit on. I set six Yahnke at the same time and in the same location, but these have not done well.

Wrenshall Trial Station, Annual Report, 1907.

F. B. MC LERAN, SUPT.

In consenting to take charge of a trial station at my farm my hope was not that I could do great things in the way of plant breeding and plant improvement, but that the location of such a station, the very fact of having the trees there alive and growing, the object lesson of the thing would, perhaps, encourage others to take up the idea and set out some fruit and that it would result eventually in the farmers of this section growing at least some fruit for the table.

I am glad to say that, although the station was established only four years, this prime object has already been attained. At the same time I do not want it understood that this is the only success the station has attained.

This year ten trees came in bearing, the Hibernal, Okabena, Duchess, Wealthy, Wolf River, Northwestern Greening, Talman Sweet, Minnesota and the Martha and Lyman's Prolific crabs. These trees bore from three and four specimens up to one-half bushel of apples per tree and would have borne more, but the blossoms were picked off so as to leave only a sample. This fruit was not to be excelled by any in the state!

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The strawberry crop was immense. Berries were shipped to Duluth market and brought $3.00 per sixteen-quart crate, or 19¾ cents per quart wholesale. The boxes contained, not more than forty berries to the quart, and some of them only twenty. They sold at retail "like hot cakes" for 25 cents per quart.

They were so large and fine that both the Duluth papers took photos of them which were reproduced in the papers with the comment that they were the largest and finest ever seen on the Duluth market!

All stock at the station is doing well. Various experiments and trials are under way but have not yet been completed, so reports will not be attempted at this time.

The trial station at Wrenshall is located on the St. Louis river, twenty miles from Superior, in a country where there is scarcely anything but pine stumps. Four years ago the executive committee decided to have a trial station at that place to see if they could not grow some fruit as well as pine stumps. I was chosen superintendent of that station, having just opened a farm among the stumps. At this time we have growing two hundred apple trees and two dozen plum trees. They cover thirteen varieties of apples and a half dozen varieties of plums. We have tested thirty-two varieties of strawberries, also gooseberries. raspberries and things of that sort. The object of this station has been more in the way of finding out what kind of things would grow there than to try to do wonderful things in horticulture, or to try to develop new things, or anything of that kind, and I am only a farmer and not much of a horticulturist. Our object is to find out the standard varieties of hardy fruit that will do well in that vicinity, because they must all be tried in order to encourage fruit growing in that part of the country. At the time the station was started I might say there was no fruit grown at all, except that a few things had been planted by the early settlers, but this fall at the county fair, our town of Wrenshall had an exhibit of thirty-seven plates, each plate representing a different variety of apples and crabs, and we had an exhibit of which Mr. McGuire, superintendent of the northeastern station, said was as fine as anything there at the fair. I am very sorry indeed, and regret very much since I have been down stairs and seen the exhibit there, that I did not save some of the apples so we could have had a little showing from the station at this meeting, but I will promise you by another year if we have a crop of apples we will make an attempt to save the fruit and have it down here so you can see for yourselves what we raise. I felt a little backward about coming here and talking, because I had an idea you might think fruit growing in our section amounted to absolutely nothing, but I think next year we shall have an exhibit of fruit here and then you can judge for yourselves as to what we are doing. (Applause).

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Edible Nuts in Minnesota.

H. S. FAIRCHILD, ST. PAUL.

I have long been deeply interested in horticulture and formerly had some little experience in it, which came about in this way: In 1882 a gentleman living at Winnipeg wrote to me that he would like me to sell for him 200 acres of wild land in Dakota Co., Minn., for $10.00 per acre. I soon showed it to a customer and found that it was five miles from St. Paul on a beautiful lake with fine shore lines, land good, somewhat rolling and thickly covered with a second growth of oaks, poplars, birch, elms and cottonwoods.

My customer was not well impressed with regard to it, and at once declined to buy, especially because about thirty acres of it were in the lake. I did not urge the purchase, and at once determined never again to offer it but to buy it myself and make of it, as I did, a beautiful summer home.

In a few years I had fifty or sixty acres in cultivation, forty acres on the lake shore parked—the trees thinned out and trimmed up so as here to give room for a fine individual tree, there to make a shady group, always having reference to the vista—making the lake visible from far back—Fort Snelling and Minneapolis to be seen dimly in the far west view and several lakes glinting in the valleys between. I soon had a good apple orchard, plums, cherries, grapes and all small fruits in abundance.

My memory then ran back to boyhood days, and I thought of the hickory nuts, the walnuts, the butternuts, the chestnuts and the beech nuts which we used to gather in such quantities in Ohio and lay up for winter evenings cracking and eating, and determined if possible to have them here. Of the black walnuts and butternuts, I felt sure, for both are indigenous to Minnesota, though the walnuts are very rare and, I believe, are to be found only in the southern counties. I hoped to succeed with the shell bark hickories, which yield the fine nut so common in the markets and which are so universally liked, because they have been reported as growing in our southern counties and in Wisconsin.

I spent much time in early days exploring and locating government lands in Minnesota, and it so happens that I never saw a shell bark hickory in the state. I have, however, seen the pignut trees growing wild in West St. Paul and near the west end of Summit Ave. in St Paul—and the pignut tree is of the hickory family—and so I thought, if one member of the family grew here probably other members might

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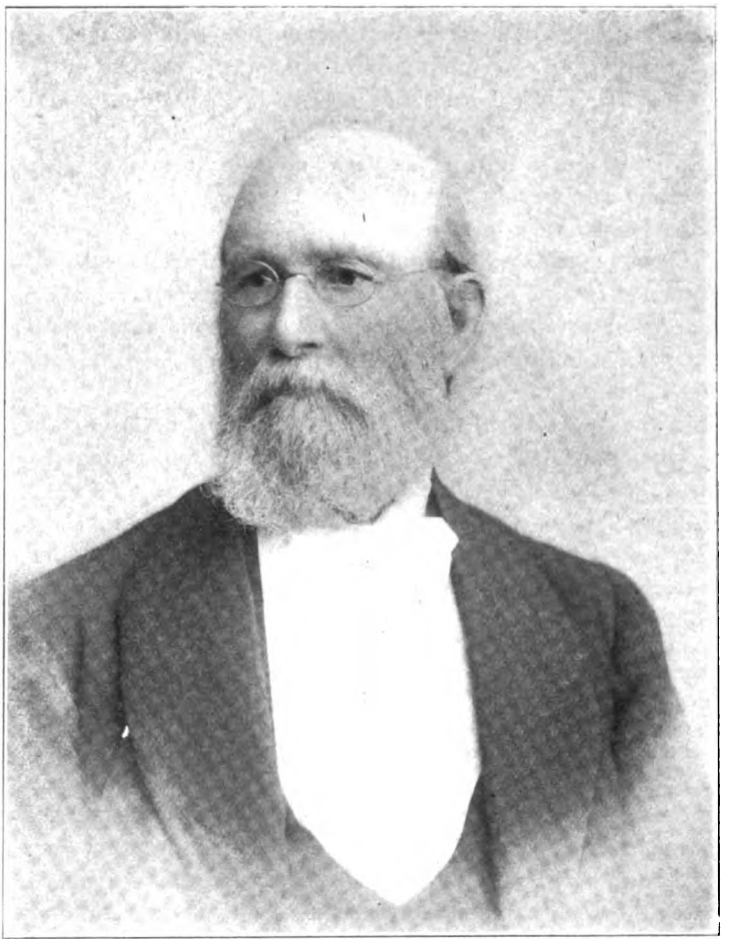
The black walnuts and butternuts of course lived and grew and fruited. The two hickories lived and grew to be considerable trees, but a tenant cut them down, not knowing what they were. I am satisfied they will live here.



H. S. Fairchild

The pecan is also of the hickory, or Hicoria, family, but we are so far north of its habitat that I planted only one, and that with little hope of its living, but to my surprise it is still alive and well seventeen years after planting. Its growth has been slow, and it has never fruited, but I hope yet to see it loaded with its delicious nuts.

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I planted four chestnut trees—the American sweet chestnuts—bought of a nursery, which, after a few years of healthy growth, died. I planted four more with the same result. The deaths of all these occurred in dry years. The chestnuts need moisture, and nature gave them tap roots to go deep down in the earth to get it, but these roots had been cut off. In the nurseries they always cut the tap roots the first or second years, for if not cut the tree will depend almost wholly on these and not throw out laterals. So if later the tap root is cut, there being no laterals, the tree of course will die. If cut early with the laterals well established the tree will live and flourish in wet seasons, but is almost certain to die when dry years occur.

So I decided to plant the nuts where I wanted the trees to stand, and sought a fit place. I had observed that along a high picket fence the snow every winter piled up three or four feet deep. It would make a good nursing mother for the young trees. Along this fence at intervals of twelve or fifteen feet, I spaded up a little space where I put a few nuts and covered them with a little earth and old leaves to preserve the moisture, and as partial protection against the gophers placed over this a flat stone, which, of course, I removed in the spring.

Quite a number of the nuts germinated, the plants grew and today there are eleven handsome, hardy, healthy chestnut trees, about ten inches in diameter and twenty-five to thirty feet high, well loaded with chestnuts. They are the admiration of all beholders. Each burr has three nuts, and I recently noticed that while the middle nut was fully developed the other two were not, which I attribute to the late spring this year.

If these nuts were planted we might hope for trees whose nuts would always mature, even in short seasons, and after a while have thoroughly well acclimated chestnut trees.

In addition to producing fruits and nuts, I sought to grow some other trees and plants of doubtful vitality in this latitude, such as the horse chestnut, catalpa, cut-leaved weeping birch—all now quite common; the Kentucky coffee tree, the sycamore, or plane, or buttonwood tree; the Judas, or red bud tree, the white dogwood and the black mulberry, which grows wild in the Ohio forests and yields a most delicious berry.

The sycamores were planted near the lake shore and are living. They should always be planted near a stream or lake where their roots can reach the water.

The Kentucky coffee tree of course did well, as it is a native of the state, though exceedingly rare. It makes a very pretty tree with its purplish-colored compound leaves.

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With the Judas trees and dogwood I failed; another planter in different soil, with a different exposure and more skillful care might succeed. In all your experiments remember the early failures and final success with apples.

The mulberries grew to considerable size, were apparently healthy and fruited for several years but after a while died. I still think we could succeed with them. If their seed had been planted we might have gotten more hardy trees.

There was a severe storm in Minnesota in 1893 as some of you will painfully remember, and my title to the farm was blown away. I still love the dear old farm and "once in a while" drive down and spend a day of mingled pain and pleasure looking at the abundance of perennial flowers which I had planted—the orchard in bloom, making all the air fragrant, or laden with fruit, as it yearly is; at the chestnuts, the walnuts, the butternuts, laden with nuts, and the fine groves of dear old trees and the beautiful lake in its varying aspects.

In all I have said I know quite as well as any of my hearers that no special knowledge of horticulture or peculiar skill is disclosed. I simply planted some trees that I knew to be of doubtful vitality here, that I wanted—cared for them, and many of them lived and grew and fruited and repaid me a hundred fold for all the money and labor expended on them.

To be entirely candid with you, I did not come here wholly to talk of nuts and fruits, but with the trust that you would be kindly indulgent if I should be led off by a not remote connection to say something in a more general way with regard to the planting of a greater variety of shade and ornamental trees on our home grounds and, perhaps, offer some mere suggestions as to profitably cultivating certain kinds of trees on lands that we now permit to be waste.

In a larger, more general way tree culture or forestry is forcing itself on the attention of all thoughtful men. I only want to ask these practical men if it be not probable that many tracts of low, wet lands that are incapable of drainage could not be profitably used by planting first on their borders soft maples, elms, and cottonwoods to pump up the water—as they do to an almost incredible extent—marching inward with the trees as the waters recede and planting tamaracs or larches in the permanently wet places. The wet lands are the native homes of the tamaracs.

Downing in his "Landscape Gardening and Suburban Homes" tells of a deciduous cypress, the "Nootka Sound cypress," a native of Russia, resinous and coniferous like the evergreen cypress of Louisiana and

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Florida and, like the evergreen, making its home in water, which has proved entirely hardy in New York after many failures. Who of you for the good of the state and your own profit will make the experiment suggested, introducing this strange tree to its Minnesota cousin, the larch?

And our hillsides, too steep for profitable cultivation, how can they be used to better advantage? If sloping to the north and near enough to the house for protection, the answer is ready—plant an orchard.

As to the rest, why not try on a small scale the cultivation of nut-bearing trees whose woods are valuable, as the beech, the chestnut, the hickory, the butternut, and especially the walnut, whose timber is exceedingly valuable and its nuts so toothsome?

Will some of you gentlemen tell me why it is our people forever plant soft maples and box elders and lindens and cottonwoods in preference to the walnut? None of them approach it in beauty and grandeur. Few trees have such beautiful foliage, so fine and noble a form. If it have room to expand, it forms one of the most majestic trees in the American forests. The wood is hard, beautifully grained and colored and admits a high polish. Its leaves and young nuts diffuse a delicate aromatic fragrance in the dewy morning or after a shower, and its nuts alone will repay all they cost you.

Luther Burbank—that wizard in the development of plant life—claims, and I presume truly, that he has caused walnut trees to grow in fourteen years to have a diameter of two feet and a height of eighty feet. Take your pencils and calculate how many thousand feet you could sell at $125 to $150 per thousand if your farm were all planted to walnuts and then, like Carnegie, go to thinking how you could give away all your wealth before you die.

It is true that the black walnut loves a rich valley soil, but it is also true that if grown on the hillside or on stony ground, while it will not be so large, yet it will be gnarled and knotty, and its grain be more beautifully mottled and will sell for more per thousand.

Now many of you will be planting for shade or ornament or fuel or windbreaks. Why adhere to the narrow list of poorer trees in preference to these so much better? The chestnut is far better than any of them. It is a beautiful tree admired by all—it will give you dense shade and valuable wood and excellent nuts. For these nuts, the hickory nuts, and the walnuts, your great-great-great-grandchildren will rise up and bless you.

The chestnut tree lives as long as they say Methuselah did. There is a chestnut tree in Europe 800 years old and 200 feet in circumference.

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So too of the hickory. It will give you a noble tree and furnish you a wood that burns fiercely, that is hard, tough and elastic, and that will furnish you with a nut of fine flavor, liked by all, and that will make many a winter evening pleasant. I would not live a year on a farm without planting these nut-bearing trees. I would also plant by the water side the great white trunked sycamore with its large light green leaves to contrast with those of lanceolate form or of darker color. I would plant the American yellow poplar and the black gum tree, to see its heavy mass of foliage flame up to glorify the autumnal days, for it is the acknowledged king of all rubescent trees.

I would, too, plant the beech, if for nothing else that the callow boys might cut their sweethearts' initials within a heart cut on its smooth bark, as we boys did in Ohio, and I would *make* the dogwood grow to brighten the early spring days.

Trees have always been man's best friend, and he, alas! their worst enemy, more pitiless than the wild winds, the tempest's wrath or the fierce fires that sometimes sweep over our forests. We now begin to feel the evil of our wasteful system with regard to them and tremble at the thought of their destruction and its fearful results. A cry of agony already comes up from France, Spain and Italy, where fertile districts have been made barren by the denudation of their woodlands.

Before the winds were born, when the earth was enveloped in a warm, vaporous atmosphere that shut out the sunlight, the great cylindrical fern trees grew to the height of 100 feet in the ooze that gathered on the cooling rocks, and in time their rapid growth and quick decay made the great coal beds that were millions of years afterwards to minister to man's needs.

The ferns were the children of the twilight of creation. Without the protection of the dense, vaporous clouds that filled all the heavens, the heat of the earth and the heat of the sun would have blasted them. As the earth did cool and the vapors found a resting place on the earth's bosom in the form of lakes and seas and rivers, and the sun became visible, the ferns did wither and die in its radiance; and now after the lapse of aeons of ages their souls flame up in forges and furnaces and their pent up powers in thousands of ways do service to man.

Ever since the earliest days of human life on the earth the trees have been man's protector against the fierce wind blasts and the blistering sun and have supplied his manifold wants in numberless ways, and ungrateful man has been their worst enemy. More and more as the earth circled the sun the trees that so befriended man have through

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man's agency disappeared, and the earth in places, parched and blistered for want of their protection, is crying out for their restoration.

The agriculturist marches through forests relentlessly felling great and small to open the land for cultivation. The invading armies of the lumbermen slash the pine, the fir, the oak, the ash and the redwood for lumber for buildings. The railroads use many hundreds of thousands of trees yearly for ties and trestles and bridges, and other hundreds of thousands of trees are yearly cut to make pulp for paper. Forest destruction is the most startling fact that man must face in the twentieth century, and he must face it in the first decades of the century. We *must cut—but we must replace.* It is a question that demands *instant attention.* This fact is my apology for this digression from the topic assigned to me.

Mr. D. T. Wheaton: Have you succeeded in growing beech nuts?

Mr. Fairchild: I had one beech tree perfectly healthy, but it was girdled and it died, but in the northeast corner of Como Park you will find a group of healthy beech trees.

Mr. Wheaton: When would you advise planting the chestnut and the beech nut?

Mr. Fairchild: Plant them in the fall.

Mr. Albert Larson: I was interested in the walnut. I have on my lawn trees that produce seven bushels of nuts every year. I have a neighbor who has a tree over two feet in diameter, and he gathers over thirty bushels of nuts from that tree every year. I also have some catalpa trees that are very beautiful. Some of my neighbors got some from Colorado, but they kill back in the winter. Mine have not killed, and they bloom profusely; they are very beautiful and everybody admires them.

Mr. W. A. Buggs: How do you treat the butternut? They are grown in a portion of our state, and how should they be planted? I ask for information because I do not know. It is very hard with us to get that tree started.

Judge L. R. Moyer: I do not know the best method of planting the walnut and the butternut, but the method I have pursued is to plant them as soon as ripe in the fall, and I think you will find no difficulty in having them grow as easily as corn or potatoes.

Captain A. H. Reed: I would like to ask a question about the propagation of the oak. I find the acorn is the hardest nut to grow of any. I have never had any success in growing those that I brought from the south and east.

The President: Have you ever tried the native oak?

Captain A. H. Reed: No, I have not. I know where they fall on the ground they grow very easily, but whenever I have tried planting them they will not grow.

Mr. O. W. Moore: I find no trouble in growing the horse chestnut or buckeye. It is growing very well and bearing heavily every year without any particular attention from me.

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Captain A. H. Reed: What do you know about the white oak or the red oak acorn?

Mr. S. H. Drum: Down at Waterville some years ago a man had a thick hedge of black oak. He said he had raised them entirely from acorns he planted. I have one or two black oaks myself that I have raised from seed, and I have some bur oak raised that way—they are of slower growth.

The President: I have raised a good many seedlings of the red oak, the bur oak and the scarlet oak. The thing to do is to gather the seed and sow it as you gather it in trenches—just sow the acorns as you would sow beans. Open some trenches and sow the acorns just about as thick as you would sow navy beans. They are as easy to grow as anything I know of. The white oak is easy to start in autumn, and you ought to get that started as soon after it falls as possible, but so far as the others are concerned they can be left for a considerable time.

American Forestry Association, Annual Meeting, 1908.

PROF. SAM'L B. GREEN, DELEGATE.

The American Forestry Association met in Washington, January 29th, in the reception room of Willard Hotel.

Mr. Gifford Pinchot, Forester of the U. S. Department of Agriculture, spoke upon the situation regarding our natural resources and the importance of properly caring for them. Of course, the subject of the proper care of the forest wealth of this country came in for much attention from him. He referred to the enormous area in this country which is well adapted to forests and which, due to the ignorance of our people, is almost nonproductive and in many cases mere barren waste. He referred to the importance of conserving water powers and the close relation between them and the forest cover, and that this relationship was so close that it was important for the government to take some action to maintain a just and reasonable relation between them.

Much interest centered in the discussion of the proposed Appalachian reserve, which is now attracting much attention from the people of the east, central and southern states, and from foresters in general. If the plan proposed is carried out a reserve containing approximately 15,000,000 acres, and extending from southern Pennsylvania south into Kentucky and Tennessee, will be set aside as a reserve. There is quite a general feeling in the east, that as the government has set aside so much government land in the west for forest reserves it ought to do something for the east, where

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the country is more densely populated. It is urged, too, that without proper government supervision the forests of this section, which are largely hard wood, will be destroyed and the water powers wasted.

This matter was discussed under the following heads:

"Flood Damage from Appalachian Rivers," by Mr. E. J. Watson, of South Carolina.

"Erosion in the Southern Appalachian Mountains in its Effect on Navigable Rivers," Prof. L. C. Glenn, of Vanderbilt University.

"Need of Southern Appalachian Forests for Protection of Water Power," W. S. Lee, Jr., Charlotte, N. C.

"Is the Appalachian-White Mountain Bill Constitutional?" Harvey N. Shepard, Boston.

"Relation of Mountain Forests to Inland Water Navigation," W. J. McGee, Inland Waterways Commission.

The day after the meeting of the association a hearing was held before the Agricultural Committee on this bill. At the present writing it looks as if Congress would hardly undertake anything quite so elaborate as founding this reserve at this session, on account of the great expense involved.

Other subjects discussed were:

"Co-operation between the Government and Timberland Owners."

"Forests and the Health of the Nation." In the course of this address Mr. McFarland stated that the health of the people is the beginning of happiness.

"Forestry as a National and as a State Problem," by Hon. Jacob H. Gallinger, Senator from New Hampshire.

"Interest of the South in Appalachian National Forests," by Hon. Hoke Smith, Governor of Georgia.

MAKING VINEGAR.—Assuming that you have good apple cider, the question of making good vinegar is one that even then calls for some considerable attention. The old-fashioned way of putting the vinegar into casks and then putting in a little mother of vinegar from the old barrel will work just as well now as it has always done, and will ensure good vinegar, providing the cider is of good quality; but it takes at least a year and sometimes longer to do this. Hence some of the cider makers have adopted the method of using beech-wood shavings, through which the cider is allowed to drip slowly. This exposes the cider to the air, and it changes to vinegar very quickly.

The cider barrel for this purpose should be raised high enough to allow room for a barrel with beech-wood shavings and another cask under it, and as the cider comes out of the spigot it should run over a fine strainer that will spread it thinly through the barrel containing the shavings. Treated in this way a few times the cider forms vinegar very quickly.—O. J. Farmer.

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American Breeders' Association, Annual Meeting, 1908.

PROF. S. B. GREEN, DELEGATE.

The American Breeders' Association held its annual meeting in Washington, D. C., January 28-30. There were perhaps 200 people in attendance, and the meetings as a whole were very interesting.

The Mendelian theory of the transmission of characteristics occupied much time and attention, but those presenting papers on this subject differed so much in their views in regard to it that the discussion lacked interest and point. There was a very general feeling that too much time was put on this, a subject of relatively little importance for a meeting of this kind. Dr. Davenport thought the Mendelian theory should be considerably modified.

The well known carnation specialist of Queens, New York, Mr. C. W. Ward, gave a paper on "The Transmission of Colors in Carnation Flowers." He exhibited a very fine lot of carnations, and two of his varieties took the highest awards. His success in this line naturally attracts attention to anything he has to say on the subject. In a talk last autumn at Saginaw, Michigan, he told me that in his nursery business he recently charged off $60,000 against his plant breeding account. Mr. Ward presided at several of the sessions. The Carnation Society, which met at the same time and in the same building as the Breeders, had a fine, large exhibit of the flower for the development of which their society stands. There was also a joint session of the Breeders' Association and the Carnation Society.

Dr. Bell discussed the subject of improving the human race by paying some attention to mating of the human family. He would have a careful study made of the different human races, their adaptability to assimilation by the Anglo Saxon race and would keep out those that have a tendency to lower the type. He would then have marriage made easy and divorces made more difficult to obtain. In discussing the effect of war on the development of the human race, he said that while war among primitive races had the effect of developing a higher type, as the weak were generally destroyed or anyway most liable to destruction, yet modern war, which was carried on away from home by the most virile of the race, had the direct opposite effect, as it was then the strongest males that were killed and the weak that were

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permitted to survive, and they perpetuated the race. He handled his subject in a broad, humane way and expressed the thought that in practice of eugenics no backward step should be made in the moral and mental elevation of the race nor in the development of that which is best in the family relations.

Prof. H. L. Bolley, of North Dakota Agricultural College, presented the subject of the breeding of varieties of flax that would resist the disease so troublesome in flax districts known as flax wilt. He stated that by selecting the most resisting plants for a series of years he had succeeded in developing varieties that in North Dakota, at least, were sufficiently resistant to this trouble, so that they could be grown successfully where the ordinary varieties failed completely. He says that disease resistence in plants cannot be cultivated, but it may be transferred in three to seven years by crossing.

Dr. Orton, of the Department of Agriculture, told of his work in originating a new strain of disease resistant watermelons, adapted especially to the southern states. His ideal melon was large, round-oval in form and striped. He found that the long green citron melon, without stripes, entirely resisted the disease which destroyed the watermelon. He crossed this citron melon with the best types of striped watermelon. As a result of this work, in the first generation a large portion of striped melons were produced, but the flesh was hard, like that of the citron. In the second generation a larger portion of oval striped melons were produced, and the flesh was softer. In the third generation flesh of good quality was produced, and a valuable variety had been originated. Fifteen acres of it were grown last year as a market test, and it proved successful, and a new resistant, commercial watermelon had been produced.

Dr. Orton has carried on similar work in producing disease resistent cotton and with marked success.

Dr. H. J. Webber, in discussing the general subject of breeding, stated that the inbreeding of animals, by which our most valuable breeds of cattle have been produced, was not so close as in plants. In the case of animals the breeding is between two individuals, in the case of plants between parts of the same individual. At the Illinois station in breeding corn it was plainly shown that marked degeneracy was evident in corn that was inbred even for

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one generation. He asked the question: has anything been done to determine accurately what are the possibilities of inbreeding between different strains in plants?

R. N. Sewell, of Oyster Bay, N. Y., stated that he had had large experience in the inbreeding of Arab horses, and had found that where inbreeding was practiced between parents of good vigor and form that, while there was no reduction in size, there was a reduction in vigor, and uniformly the progeny had inturned hocks.

There were a large number of papers on the program.

The report of the committee on breeding forest and nut trees, written by Clifford Pinchot, Chief Forester, was read by G. B. Sudworth. Other papers read were on "Breeding Cantelopes," by P. K. Blinn, of Rocky Ford, Colo.; on "Breeding Cereals," by L. S. Klinck; an illustrated report on breeding fish, by J. W. Titcomb; and "The Field for Economic Plant Breeding in the South," by David Coker, of Hartsville, S. C.

Resolutions were adopted urging Congress and the people of the country to aid in the preservation of species, such as the buffalo, which are in danger of becoming extinct. Another resolution urges Congress to thoroughly investigate the question of quarantine of imported plants, and the association put itself on record as opposing any hasty or radical action by Congress in the establishment of such a quarantine. In two other resolutions, the council, composed of the officers of the association, was authorized to establish a club rate for admission to membership, and to publish an association organ, to be known as "The American Breeders' Magazine," whenever the financial condition of the association will warrant the expense.

A reception was given the association by President Roosevelt. Our friend, Hon. W. M. Hays, Assistant Secretary of Agriculture, who had much to do with founding the association, was again elected secretary. Mr. H. H. Mowry, a graduate of the Minnesota College of Agriculture, was elected assistant secretary, and Prof. N. E. Hanson, was elected secretary of the plant breeders' section.

Some New Fruits. Prof. N. E. Hansen, at Brookings, S. D., who is too well known to the members of our society to be further spoken of here, is offering this spring a number of new fruits of his origination there, at the State Experiment Station. Some are plums, crosses of American with Japanese or Chinese varieties; some are sand cherry hybrids, and others are new native plums. Hardy strawberries and raspberries are also included in the list. A descriptive list of these new fruits can be had of Prof. Hansen, upon application.

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Annual Meeting, 1908, Horticultural Society of Kandiyohi County.

C. C. SELVIG, WILLMAR, SEC'Y.

Held in Willmar, Minn., November 27th, 1907. Meeting opened at 10 o'clock a. m. President Frye in opening the meeting spoke of the growing membership and the interest taken in the advancement of the society, not only by the members but by the county at large. A number of years ago fruit raising was uphill work, but today Kandiyohi county is noted for its great success in raising all northern and western grown fruits. Topics were taken up and discussed as follows:

Strawberry Culture: Mr. Walgren, the largest grower of strawberries in this county, gave his views. The new bed of strawberries should be planted so that the plants be twelve inches apart in four-foot rows. The beds should be kept free from weeds. After fruiting cut tops and cultivate thoroughly. When ground is frozen about four inches, cover with six inches of straw. In the spring the straw should be loosened so that the dampness would not rot the plants.

Raspberry Culture: Mr. Selvig spoke of the red and black cap raspberry culture. The canes should be cut back to sixteen inches in the spring. The greatest mistake is in letting canes grow too tall. Cultivate same as corn. The Loudon is considered the best raspberry for culture for the market. Mr. Walgren stated that the King was the earliest but the Minnesota Iron Clad the best berry to stand the climatic conditions of Minnesota.

Gooseberry and Currant Culture: The general discussion brought out that three to five canes produce the best berries. Leave three sprouts for future canes. Currants and gooseberries need lots of fertilizing and cultivation. The Houghton and Downing are sure bearers. Spray with bordeaux mixture in spring and after blossoming.

Tomato Culture: Mr. Powell spoke of the cultivation of the tomato in England and how they raised the tomato for market in hot houses. He spoke of his success in this country with the Ponderosa and Tenderloin. He believed in warming the plants to get the best results. A general discussion followed.

At the afternoon session the question of making an appropriate display at the state fair was taken up and discussed. The following resolution was adopted:

Resolved, that the Kandiyohi County Horticultural Society in meeting assembled does hereby ask the county commissioners of

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Kandiyohi county to appropriate five hundred dollars to defray expenses in making an appropriate display at the next state fair of cereals, fruits and products of Kandiyohi county, under Chapter 99, H. F. 336, General Laws of 1907.

Plum Culture: The following points were brought out: The Aitkin variety is not a success; too wet seasons for plums; trees should be planted twelve to sixteen feet apart; Forest Garden and De Soto are the best varieties.

Apple Culture: President Frye told of his experience. He sold over fifty dollars' worth of apples this year. Peerless and Wealthy are now in splendid shape and good keepers. If we get the right varieties we can raise good summer apples and good keepers. The following were endorsed as the best varieties—Duchess, Okabena, Wealthy, Patten's Greening, Peerless, for home market. Crab apples—Transcendent, Virginia, Lyman, Whitney and Minnesota, were spoken of as the best varieties for marketing.

Culture of Young Apple Trees: Wrap young trees to protect from sun and from rabbits. The covering may be left on for years with no ill effects.

Spraying Trees: Mixture: Six pounds lime, four pounds vitriol and fifty gallons water, general recipe for trees.

The chairman appointed the executive board, consisting of Frank Nelson and J. Bjornberg, to audit the reports of the secretary and treasurer.

The chairman spoke of the death of B. F. Jenness, an active worker in the association, and the secretary was instructed to draw up a resolution of respect and place the same upon the records of the association.

The reports of the secretary and treasurer were audited and reported by the committee as correct. The minutes of the last meeting were reported correct.

The following were elected officers for the ensuing year: President, P. H. Frye; vice president, John Ahlstrom; secretary and treasurer, C. C. Selvig; executive board, E. R. Rasmusson, S. J. Walgren and John Kleberg.

It was moved and carried that a personal report of each member be made at the next annual meeting of his work and progress in planting, cultivating and results in the line of horticulture. The meeting then adjourned.

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SECRETARY'S CORNER

ARE YOU SAVING SEED to plant this spring in the apple seedling contest? Do it! If not posted about this, send to the secretary for information.

NORTH DAKOTA STATE HORTICULTURAL SOCIETY.—This organization held its annual meeting in Fargo, Jan. 16th, with a good program mainly devoted to forestry, although fruit growing was not neglected. Several speakers of national reputation were on the program. The officers elected were, Pres., Prof. C. B. Waldron; Secretary, O. O. Churchill, both of the Agricultural College; and Treasurer, R. R. Thompson, of Bottineau. This organization is on the membership roll of the Minnesota Society again this year as an auxiliary, and has at the present time 146 members.

THE MINNESOTA FORESTER.—This is the modest name, and yet especially appropriate, given to a little twelve page journal to be published monthly by the Minnesota Forestry Association, the first copy of which is now out. It is intended especially for distribution amongst those who are in any way, either professionally or otherwise, interested in the care and development of our native forests. The large and growing interest in this most important work warrants the issuance of this journal. It comes out as a strong champion of the acquirement of non-agricultural lands by the public and their operation under the care of a responsible management capable of scientific work that should bring economic results. Hon S. M. Owen is president of this association, and Prof. E. G. Cheney, St. Anthony Park, secretary.

DEATH OF MRS. LYDIA B. MANNING.—This estimable lady, widow of Jacob W. Manning, late of Reading, Mass., and founder of the Reading Nurseries, died at her home on Jan. 8th after a brief illness. Mrs. Manning was advanced in years; the writer does not know her exact age. Mr. Warren H. Manning, for many years now a life member of this society, and a landscape architect of national reputation, was one of the sons of Mr. and Mrs. Manning. There are several others, two of whom we understand are carrying on the nursery, and still another engaged in the occupation of landscape gardening. Mr. Manning and his wife were very frequent visitors to Minnesota, and it seems only a very short time since they met with us at one of our summer gatherings. The old members of the society who had the pleasure of a personal acquaintance with them will especially regret the news of their passing. They were made honorary life members of this society twenty-two years ago, in 1886.

PRIZES FOR CHILDREN.—On another page of this issue will be found a list of prizes awarded to the children at the time and place of the annual meeting of the Minnesota Educational Association, held in St. Paul January last. These exhibits are brought together through the cooperation of the county superintendents of schools throughout the state, and represent the effort of the children to show their interest in the various departments of this exhibition. The executive board of this society appropriated $100 for premiums on apples in connection with this exhibit, and the list indicates who are the successful contestants. Only $70 in all was awarded. The postoffices of these contestants are not known, as they came to the exhibition by counties

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only. In paying these premiums, a check was made out to each successful contestant and attached to a personal letter, accompanied also by one of the little pink folders of the society. These were all put into an envelope, and in this shape they went to the party to whom it was directed through the hands of the proper county superintendent. There was not at this exhibition a large display of fruit, but some very good specimens, we understand.

CROWN GALL IN MINNESOTA.—The State Entomologist has just issued a neat phamphlet upon this disease, which is alarmingly prevalent among raspberries in Minnesota. The publication is illustrated with a full page halftone, showing the appearance of crown gall on raspberries. Copies have been mailed to all the nurserymen in Minnesota, and any raiser of berries in the state who wishes to be on his guard against this bacterial disease which destroys raspberries, can obtain a copy by writing to Prof. F. L. Washburn, State Entomologist, St. Anthony Park, Minn., and enclosing a stamp.

EXPERIMENT MATERIAL FOR THE NEW PLANT BREEDING FARM.—The plant breeding farm purchased and now in shape to begin work in the spring, the result of the appropriation made by the last state legislature, needs the co-operation of the members of this society in the work to be carried on there. Scions of valuable varieties of seedlings should be sent in good time in spring before the grafting season comes on, accompanied of course by a description of the variety furnished, with the name of the grower, etc. Any assistance that the members can render in the advancement of this important work will help forward the enterprise by just so much, and any who send may be sure that no other use will be made of the scions, etc., than to test them as to their value, and use the fruit growing from them for further crossing work. There is no danger that they will get into other hands. Of course they will be labeled in the orchard in such a way that one not having the key would be entirely ignorant as to the name and origin of any particular variety. Address Chas. Haralson, Supt., Excelsior, Minn,

THE PERKINS' SEEDLINGS TO BE PROPAGATED.—Our readers will be interested to know that Mr. T. E. Perkins, of Red Wing, the originator and owner of the famous collection of seedling apples known as the "Perkins' Seedlings" has disposed of a number of the best of them to some of the nurserymen of the state, by whom they will be propagated, and as soon as possible put upon the market. There are in this noted collection many long keeping varieties, and some of excellent quality. Probably no seedling orchard in this country has aroused more interest than the one referred to. Since it came into bearing, some ten years ago, the fruit from this orchard has been exhibited repeatedly at our state fairs, 100 and more varieties, and the interest in this exhibit is fully maintained, notwithstanding it has been now so many times repeated. A very full exhibit of the collection, made by Mr. Wyman Elliot, at the American Pomological Society meeting in Boston some years since, received in recognition the Wilder medal, and was looked upon with astonishment by our brothers in the east. Grown as they are from the seed of one lot of Malinda apples, evidently crossed with a number of other varieties, there is such a uniform hardiness, freedom from blight, and other good qualities in the collection as to mark this orchard as one of the remarkable horticultural phenomena of the times.

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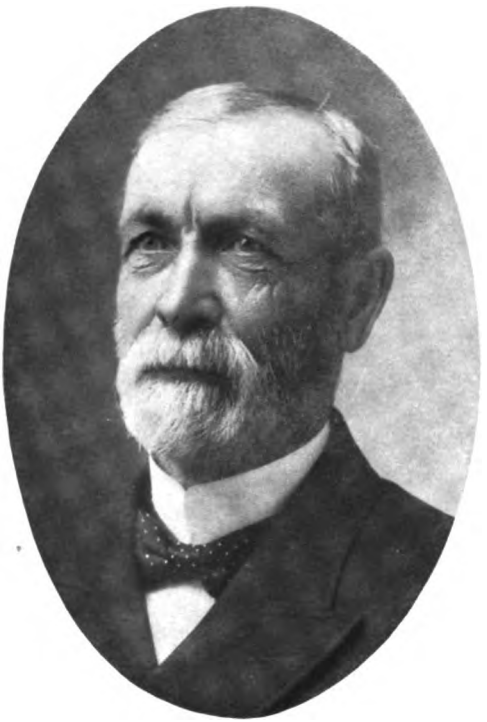

HON. DAVID SECOR,
Late of Winnebago, Minn.

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THE MINNESOTA HORTICULTURIST

Vol. 36 APRIL, 1908. No. 4

IN MEMORIAM.

David Secor,

WINNEBAGO, MINN.

Died Sept. 14, 1907, Aged 71 Years.

On Sept. 14th last the subject of this sketch passed to that bourne from which no traveler returns, at the age of 71 years, 8 months and 8 days.

David Secor was born in Putnam county, N. Y., Jan. 6, 1836. His ancestors on the paternal side were French Huguenots, who came to America about 1689 to escape religious persecution.

His boyhood and early manhood were spent on his father's farm in a narrow valley called, locally, Peekskill Hollow, where he was permitted to attend common school three or four months each winter, laboring on the farm the other eight or nine months of the year.

At the age of twenty he came to Iowa. At that time the only railroad in the state was from Rock Island to Iowa City. Having a cousin in Johnson county, he stopped there during the first summer and helped build a brick house on the farm, and later helped to erect the brick buildings for the United Brethren College at Western, in Linn county. On completion of the college buildings at Western he entered school in that institution, remaining in college two or three years.

In 1859 he went to Mason City, teaching in winter and working at the mason trade in summer. The first brick buildings in Forest City were built by him and his uncle, Leonard Hill, of Mason City. He located permanently in Forest City in 1860 or 1861.

In the fall of 1861 he was elected treasurer and recorder of Winnebago county, which joint offices he held until they were separated by law, but he held the office of treasurer six years.

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In 1863, in Lincoln's administration, he was appointed postmaster at Forest City and continued to act in that capacity about nine years. In 1864, while holding the offices of treasurer and recorder of Winnebago county and postmaster of Forest City, he enlisted in the Union army, was assigned to Company C, 2nd Iowa Infantry, and marched with Sherman from Atlanta to the sea. I said marched. This needs a little modification, for before reaching Savannah he was taken sick and went the rest of the way in an ambulance, pounded and bruised over the rough Georgia roads till tidewater was reached. A transport conveyed him, with others of the sick ones, to David's Island, New York harbor, where he lay at the point of death for many weeks, unable to pen a line to his anxious wife, who waited and watched the papers for every movement of Sherman's triumphant army.

In the fall of 1871 he was elected a member of the 14th General Assembly, and two years later was renominated and reelected.

In 1874 he was elected Register of the State Land Office which position he held four years, removing to Des Moines during the term.

At the end of his official term as register, he turned to Forest City and resumed his business of real estate and loans, a business which he had transacted since 1861, but latterly through co-partners.

In 1879 he was admitted to the bar and practiced law very successfully for about ten years. Every case which he undertook had his undivided attention. He never became weary of probing legal matters to the bottom. His mind was of such judicial poise, however, that he was a better counselor than advocate.

In 1882 the building now occupied by the First National Bank was erected by the real estate firm of Secor Bros. & Law. The subject of this sketch was the architect and builder, he laying most of the brick and stone and doing most of the plastering with his own hands. He dignified labor all his life by working with his men whenever the opportunity or necessity occurred. When the building was completed a copartnership was entered into with B. A. Plummer and the City Bank was organized by Secors, Law and Plummer, which later became the First National Bank. He was at one time the owner of the paper now known as the Summit, then called the Winnebago Press.

He was one of the chief promoters of our first railroad—the M. & St. L. He was also associated with Judge Porter, of Eldora, in promoting another line from the southeast. This road, however, did not get further than Ackley. What is now the Rock Island butted in and stole the territory. The first station on the Porter road was named Secor in his honor.

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In about the year 1886, he moved to Winnebago, Minn., where he built with his own hands the brick block in which afterward was opened the Faribault County Bank, of which he was president for about seventeen years. He afterward built a beautiful residence of brick, doing most of the work himself. He continued to live in Winnebago up to the time of his death.

Residence of the late David Secor, Winnebago, Minn.

David was the pioneer tree planter in Forest City. In 1861, on his return after the first visit to his old home, he brought from New York, in his trunk, many kinds of fruits and shrubs, which were planted on his grounds in the south part of town. He planted the first cottonwood trees grown in this county. He raised from seed the first apple and peach trees. And from that early time to his latest day he was continually experimenting with fruits, flowers and shrubs. He was a member of the Minnesota State Horticultural Society, and a close observer and interested experimenter in everything recommended by it. His home grounds at Winnebago contain many rare and valuable botanical specimens. Nothing delighted him more than to plant and care for the things that beautify a home.

Brother David was an honest man. One didn't need to have his word reinforced by a bond to insure performance of a verbal contract. He never evaded a promise or intentionally deceived a soul. He could

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no more perform a mean act or betray a friend than he could raise his hand to slay a brother, all of which were morally impossible with him. In his judgment of other men I never knew a person so free from harsh words, so kindly in his estimate of their motives, so free from jealousy, so charitable in his opinions of others. An enemy could not provoke him to hasty or unchristian remarks. He avoided gossip. He liked to think well of his neighbors and friends.

He was thoughtful and remarkably well informed on many subjects —a student in geology, horticulture, railroads, politics and general literature. A slight impediment in his speech interfered somewhat with a clear and ready verbal expression, and it was only to his most intimate friends that he appeared at his best.

During David's later residence at Forest City he joined the Congregational church, but on his removal to Minnesota he attended and finally joined the Presbyterian church at Winnebago. In religious life he was liberal and freely supported every church in the community where he happened to live. Many pastors and churches could testify to his openhanded liberality. He took active interest in Parker College at Winnebago, a school under the auspices of the Baptist church, and was for many years one of its trustees. He was at one time mayor of Winnebago City, and president of the school board for many years, and held similar positions in Forest City while living here.

In conclusion, he, like Paul, knew how to abound and how to suffer need. He enjoyed prosperity without pride or ostentation and endured adversity with Christian fortitude and resignation.—Eugene Secor, Forest City, Ia.

The above beautiful tribute to the life and character of our deceased fellow member was prepared by his brother, who was especially fitted to do this kindly service from his relationship and intimate personal contact with him, and from what the writer knows from a rather limited acquaintance with Mr. Secor it is toned in none too high a key. The deceased had been a member of this society from the year 1894, becoming a life member in the year 1901. His connection with the society, covering some thirteen years, was all included within the period of administration of the secretary's office by the writer. Mr. Secor was a very retiring man apparently, and I came to know him personally only the last few years of his membership, though I think that he attended the meetings occasionally at an earlier date. He impressed me as a man of large reserve force, very unostentatious, thoughtful, careful in his words, and giving expression only to the final determination of his thought on any subject. He served the society in a number of

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capacities during these years, always taking up most willingly any service placed upon him. For two years, those of 1904-5, he filled the office of vice-president for his congressional district, making one of the best reports ever turned in to the society. His name will be found a number of times with the titles of topics presented at our meetings, and whatever material came to us from him was always well digested. Not very much is said in the above account of his interest in horticulture, which was a marked feature of the life of his later years at least. He delighted in experimenting with many kinds of trees and shrubs and flowers. Any work in this direction was a joy with him.

Mr. Secor had been quite feeble for a time, and his death was not unanticipated. We mourn him as one of the strong men of the association now gone from us for a time.—Sec'y.

Preparing Bordeaux Mixture for Spraying.

SUGGESTED BY A. BRACKETT, EXCELSIOR, LECTURER ON HORTICULTURE WITH FARMERS' INSTITUTE.

Three pounds of copper sulphate, three pounds of white lime,—these to be dissolved separately, each in twenty-five gallons of water. The two to be poured together into a fifty gallon barrel. This is the proper mixture for spraying apple trees.

We use white arsenic in place of paris green, one pound of white arsenic to four pounds of sal soda, boiled in two gallons of water until the arsenic is dissolved. This amount is sufficient for 200 gallons of bordeaux mixture. This can also be used for potatoes, in which case use five pounds of blue vitriol and five pounds of lime to 200 gallons of water.

Always use wooden vessels to mix in. Never use iron.

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SPRAYING.

My Experience in Spraying.

E. F. PABODY, ZUMBRA HEIGHTS.

In the summer and fall of 1905, I became convinced that to make fruit growing a success something must be done to stop the ravages of worms and insects in the orchard. I read carefully a bulletin issued by the U. S. Dept. of Agriculture on spraying. I found there a list of reliable manufacturers of spraying outfits. I sent to one of them for a descriptive catalog, and a sprayer which seemed to answer my purpose was ordered. It consists of a tank of galvanized iron, holding eight

A University tree—well sprayed—in Mr. Pabody's orchard.

gallons, and an air pump. The cylinder, air chambers and all the working parts of the pump are made of brass. It looks as though it would last a lifetime. The list price of it was $7.50.

From the same firm I bought my spraying material, consisting of dry bordeaux mixture and paris green compound—one pound of paris green to 160 gallons of bordeaux mixture. This is far preferable to preparing the mixture at home. Twelve ounces of this mixture is used with each sprayer full of water. To avoid the trouble of weighing, a

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can holding twelve ounces was used. A cupful of material and eight gallons of water, thoroughly mixed, and everything was ready for spraying.

The first application was made soon after the buds began to swell; the second when the trees were in full bloom, just as the blossoms began to fall; the third two weeks later; the fourth after another two weeks. There were some very heavy rains during the summer of 1906, and in order to make thorough work during the season the trees were sprayed seven times.

When the spring of 1907 opened the trees were in such fine condition such frequent sprayings did not seem necessary. Only three applications were made. As before, the first was made soon after the buds began to swell, the second when the trees were in full bloom, the third two weeks later.

As to results: My orchard consists of about one hundred trees, eighty-five apple trees and fifteen Compass cherries and plum trees. About half of them were planted six years ago last spring; some of the others in each of the succeeding years. All of my trees planted at an earlier date are dead except one. In all the years I had been trying to raise fruit, I had never had in one season a single quart of Compass cherries or plums. In the summer of 1906, we had all the Compass cherries we wanted for preserving and for canning and for eating from the hand—and they are really very palatable when fully ripe. Our Surprise plum trees were loaded with such fruit as was truly a constant surprise to us, so beautiful to the sight and so delicious to the taste. Our apples were greatly improved in size, in quantity and in quality.

This year's results exceeded our expectations so far as apples were concerned. There were no Compass cherries or plums, but that was due to atmospheric conditions. There would have been none even if there had been no worms or insects in existence. Our apple trees were so full of blossoms we picked many of them off. As soon as the apples began to form, we continued the work of picking to relieve the branches, which would have broken under their weight. There was no sign of blight or scab, or any other disease on a single tree. When the fruit began to ripen, we were soon repaid for all the money and labor we had expended upon the orchard.

First came the Tetofsky, with its faint blush of red; then the Yellow Transparent, with its light-golden hue; then the Duchess, with its mingling of green and red; then the Longfield, the Wealthy, the University, the Yahnke, the Hibernal and McMahon's White. Only about half of our trees are in bearing. We estimated that we had twenty-five bushels of apples. In the entire crop, I did not see one single wormy

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apple and not one peck of knotty or imperfect apples. Taking the entire crop, I do not believe that twenty-five bushels of more perfect, more beautiful, more delicious apples were ever grown.

As to the cost: First, as to the time: I can spray my orchard of 100 trees to my entire satisfaction in half a day. The dry material above referred to costs fifteen cents per pound. Ten pounds would be as much as or more than I would use in one season. Total, one and one-half days' time and $1.50 or less in money.

Home grown fruits and vegetables at Mr. Pabody's October 10. 1907.

I prized my apples too highly to sell one of them, but it was a great pleasure to give them to my friends, sending some of them as far as Indiana and Ohio. I was offered $6.00 per barrel for all my Wealthy apples. If the trees had not been sprayed, I do not believe they would have brought more than half that price, and some of them might not have borne at all. Some of my neighbors who did not spray had apples which I would not have taken as a gift.

I am perfectly satisfied with "my experience in spraying" and earnestly recommend that each member of this society make a trial of it for himself.

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Spraying.

S. R. SPATES, WAYZATA.

I have sprayed more or less for fifteen years; there are others that have sprayed more or less also—especially less—and failing to immediately see any special benefit have concluded that it was so much time wasted. One thing may be depended on, that is, spraying is cumulative, and the beneficial effects are not in full evidence for a season or two. We are told, by the learned professor that "blight is a growth," in other words it is a parasitic plant having spores instead of seeds, and these spores are scattered by the wind and grow quickly when the weather conditions are favorable, i. e., warm and moist. When these conditions are in evidence, spraying with a mixture of copper sulphate and lime (five lbs. of each to fifty gals. of water) will prevent the blight, if put on before blight appears and with a strong force pump.

It is hard for beginners to realize the necessity of forcing the spray into the leaf. The force of the spray should be strong enough to disturb the vines so that they will be covered on both sides. We commence with a dormant spray, about the time the buds are swelling, using at that time two pounds of blue vitriol to forty or fifty gals. of water. The second indulgence in this pleasant work is when the blossoms have fallen and the apples stand upright. And as bugs, worms and vermin of all kinds put in their best licks about this time, it is best to add five ounces of paris green to your fifty gals. of bordeaux mixture.

If the weather is dry, every ten or twelve days is often enough to spray and four or five times is enough to spray any one season. If rain washes off your dope, you will simply have the pleasure of doing it all over again. It has been said to me by my friends—who don't like this beautiful work—"Say, I git as good fruit as you do, and do not have to do the nasty spraying. Therefore, in my opinion, spraying is a piece of tomfoolery to help the druggist."

As soon as this man's orchard becomes infested, a great howl will go up. Tobacco will be used fiercely; he will work his jaws and his spray pump and will begin to see the charm in this line of work.

The last two seasons have demonstrated to my complete satisfaction that in order to harvest clean, handsome fruit, fit for market and a credit to you besides, you must spray. Study conditions and study the compounds that you use. Much, very much care must be taken or your bordeaux may not be of any account. If every precaution is taken I am sure ninety per cent of good sound fruit will be harvested.

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A few trees purposely left unsprayed this past season, on which the fruit was not worth picking, being scabby and wormy, besides a sad, tired condition of the tree, side by side of one carefully tended and full of clean, nice fruit, established the evidence of the efficacy of timely spraying. Go thou and do likewise!

Residence of S. R. Spates, on the north shore of Lake Minnetonka.

It makes a man swallow hard to do this kind of work, be sprinkled with bordeaux, etc., your flesh smarting and burning with the unavoidable contact. Then to hear a veteran horticulturist say: "This spraying is all folly! just see my fruit!! If you want good fruit do as I do. I don't use no nasty lime and vitriol juice on my trees, I don't! I simply put a tight fence around my orchard and then I turn my hogs in. I am immune from scab, blight and the myriad creeping, crawling worms and other fruit enemies."

That is all good enough for that man, but I'd as soon see my orchard full of hoop snakes. To make a plum tree yield, I was once advised to turn in the hogs, so I fenced my plum patch of twenty-four trees, about five years old, and let in the swine. They got busy at once, and in about three days they had grubbed the trees pretty much out, thereby ridding me of trees and curculio too. If I had had the power some men are said to have possessed I'd filled them hogs full of devils

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and driven the whole mess into the lake! So much for the advice. But if you can't have your hogs in your orchard, what then? Simply spray!

"What shall I use?" is asked over and over again, while all the fruit papers are publishing the formula for men having eyes that see not.

Now it seems the concensus of most noted fruit men is that the "great French tonic," the bordeaux mixture, covers the most indications. Of course this mixture is a chemical affair and must be compounded correctly or another failure must be booked against the long suffering farmer. The grain of wisdom at my command has come to me through great tribulations. Now I have made barrels of this French dope, bordeaux mixture, that were simply fine. I have made barrels that were a sad failure too, made it so t'would stand for twenty-four hours without settling; made it so the ingredients would settle to the bottom in two hours and book a failure.

I have burned the foliage on my plum trees at different times, and they looked a most unsightly thing, and I felt ashamed of my scientific mixtures. Plums will not stand more than a two or three-pound vitriol and lime mixture. Each one will have to find out the strength required—work out his own salvation. The usual formulas are six vitriol, four lime and fifty water. For a dormant spray the above is the proper thing. If one has strong dislikes against this mixture, one made by dissolving two pounds vitriol in fifty gallons of water is cleaner and gives good results, cleaning and purifying the tree.

Spraying No. 2 comes after the blossoms have fallen and the apple stands out prominent. For this spraying I use four vitrol, six lime, forty or fifty water. Better have an excess of lime than vitriol. To the above this time I add five ounces of paris green. If for plums: three, five, and fifty, and five ounces of paris green to fifty gallons water.

Third spraying, same as above, ten or twelve days later.

Fourth spraying same as above.

'Tis not advisable to spray later than July 30th, as the fruit is apt to be more or less discolored by the lime, making considerable more work to remove it by wiping each one for market. I use the dust spray at this time. Applied with Liggett's powder gun. Its use covers all the indications, and it will pay anyone to look the matter up; 'tis much lighter than water and claimed by some to be as efficacious.

For aphis and all that class of insects, I find whale oil soap will break up their constitution. One pound of this delightful compound to eight or ten of water. Or, better still, use sulpho-tobacco soap; it

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does not smell so persistent, and a man becomes more reconciled to his fate.

To prevent mildew on gooseberries, etc., I find "liver of sulphur" a most effective remedy—one ounce to two or three of water. Add paris green for worms. The use of the above fills the air with fragrance of "any old thing."

How to make the French dope, or bordeaux mixture, has been published so many times that every one should be familiar with the formula. One should learn to hold his mouth right in making bordeaux —much depends on your success in doing so. Then take two kerosene barrels—one with two heads in cut in two, making two twenty-five-gallon tubs. Now dissolve your four pounds of vitrol in twenty-five gallons water, by suspending it in a sack in one of the tubs. In tub No. 2 dissolve five or six pounds of lime, being careful to add water as the lime is slaking, so it will be the consistency of paint. After the heat subsides fill up the tub to make twenty-five gallons. Now have your fifty-gallon barrel ready and you and your brother, or man Friday, both armed with pails; dip a pailful out of each one of the twenty-five gallon tubs, at the same time, and pour the contents of the pails into the fifty-gallon barrel simultaneously. Keep it up until all is mixed in the big barrel. Keep it stirred thoroughly, and your mixture should be No. 1.

The next matter to consider is a good spray pump. I am using the Hardie outfit, No. 21, price $21.75 complete, mounted on wheels, with eight-foot bamboo extension rod—for high spraying. This is a No. 1 outfit, handy and durable, and will cover any condition on a small place, and where you cannot work with a horse on account of close planting. Two men can take this outfit and do the best kind of work. All the parts of this pump are all brass but the handle. It will be as little trouble to use as any good pump of any other make. If you have plenty of room between your trees, load your outfit into your wagon-box and go about your work rejoicing. Take good care of your outfit, washing it out with clear water after each job is finished. Don't be slack about this, or you will certainly repent with sackcloth and lime—instead of ashes. When done for the winter don't store your pump in the henhouse, as some good fruit growers do.

I do not consider spraying delightful work by any means, coming as it does at a time when a man has a thousand matters to look after. But it seems to have forced itself upon us, and the successful fruit grower will be the man who makes scientific spraying a thorough study.

In closing, I enjoin you by all means to be careful of your outfit, and if you value your peace of mind in your hurried season then do not lend your outfit even to your best friend—you will probably bear watching yourself, no doubt.

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Spraying.

JOHN NORDINE, LAKE CITY.

Nearly every practical Minnesota farmer recognizes the value of a family orchard, and, having planted one, the problem before him is, how can he best care for it? My answer to this question would be: Use the modern methods, which consist of judicious fertilizing, pruning, cultivating and spraying.

Pruning.—The month of June is the best time to prune, for at that time the sap is becoming thick and wounds on the trees heal more readily; but if a farmer cannot find time in June to do this work he can easily do it in late fall or early spring. Prune just enough to cut out all water sprouts and cross limbs, thereby preventing the trees from getting too thick. Good judgment should be used. Never go to extremes and prune out so much that the trees have no protection from the sun, nor should one let his orchard go unpruned for several years, then go in and cut out many large limbs at once. Prune some each year as may be necessary. Judicious pruning will give you stronger and better formed trees and more highly colored fruit.

Cultivation.—Cultivation should never be neglected in the family orchard. The location, the soil, the condition and need of the trees should all be guides in this operation. Persistent cultivation will retain moisture in the ground, and by stirring the surface you will turn out the larvae and pupae of the codling moth, subjecting them to the action of the air and sun, and bring them within easy reach of the birds and insects which prey upon them.

Spraying.—Spraying is perhaps the most complicated of all the treatment necessary to a successful orchard, because right here a man is liable to throw away much valuable time and lots of money. On the other hand, if the subject is closely studied and careful experiments are made, a man can by a comparatively small outlay save his orchard from the ravages of numerous enemies.

In talking to a farmer the other day upon this subject, he said: "How can you expect that we farmers, with all the spring rush upon us, can ever attend to this systematic spraying that you speak of?" I said that he could if he would make spraying a part of the program for his regular spring work. Then it could be attended to at the right time. Have everything on hand, material, spray machines, etc., and it will not take long to do the spraying. In order to spray successfully, a fine spray is required, and to produce a fine spray there must be some power or pressure behind it. There are a great many things to

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learn about the spraying business, and the only way to find out is to actually do the spraying. I do not care if a man reads all the literature and instructions, or how much he is told by specialists and professors about spraying—before he knows how to spray he must actually do it. The reason that so many reports come to us about poor or no results from spraying orchards is, I think, because our knowledge of the subject is too bookish. The best education that we can gather on nearly all subjects is the education that we get by doing rather than by reading or by being told.

Since close observation, and many disasters experienced, have forced upon us as fruit growers and nurserymen the conviction that the repression of insect and fungous diseases is essential to our success, it becomes necessary first to acquaint ourselves with the foe that we are to fight. The orchardist should know and recognize the apple scab and the fruit blotch as fungous diseases. Then among the insects he should know the codling moth, the apple and plum curculio, all possessing prominent places in the army of destructive insects. And every fruit grower should be prepared to meet and conquer all these enemies.

In a large commercial nursery where a great many varieties of fruits and flowers, shrubs and seeds are grown, the list of harmful fungous diseases and destructive insects is, of course, large, and they therefore require a variety of remedies. In cases where trees and plants are affected with fungous, like apple scab, and chewing insects, such as plum curculio and others, it becomes necessary to use a remedy that is effective to both.

In the last few years much money has been spent in extensive experiments, in the efforts to determine which of all the many suggested remedies could be relied upon to produce the best results at the least cost. When I speak of results, I mean not only the killing of the codling moth, curculio and other insects, but we must be sure that we are protecting the foliage of our trees from fungous diseases also. Properly sprayed orchards carry their foliage until killed by nature, enabling them to perform their functions a much longer time than on the unsprayed trees, which will shed their diseased foliage from six to eight weeks earlier, forcing the trees into a dormant condition too early and with poorly developed fruit buds, by which the general vigor of the trees is greatly reduced.

The liquid bordeaux mixture is the weapon which up to the present time stands as No. 1 wherewith to deal deadly blows to both fungous diseases and insects at the least cost. We have found that the best proportion in this mixture for apples is what we call the 4x4x4

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formula, which means four pounds of fresh lime, four pounds of copper sulphate and four ounces of paris green to fifty gallons of water. For plum trees we use six pounds of lime, to be sure that we do not injure the foliage. For the plum and apple orchard we make at least three applications. The first, just before the blossoms open—and in this application the paris green is omitted; the second is applied after all blossoms have fallen, adding paris green to the bordeaux mixture for the leaf eating caterpillars, codling moth and plum curculio; the third application is made ten days later. All these applications are made very thoroughly and delivered under a high pressure of from 150 to 200 lbs., thus making a mist-like spray, which will give a coating of bordeaux to the fruits and twigs and not a drenching, which is wasteful of material and too expensive, and which sometimes causes what is known as "spray injuries."

The bordeaux is not only best for the orchard, but we have also found it the most effective spray to use on currants and gooseberries in the garden, where we use it in connection with paris green, killing the currant and gooseberry slugs and keeping the foliage in perfect condition, which is very essential to the full development of the plants. We also use it on strawberry and grape vines. It is, without question, the best, the cheapest and the most effective to use on both trees and plants in bud or foliage. For trees in dormant condition where scale is present I would recommend to use what is called the sulphur wash, which is made by using twenty pounds of lime to fifteen pounds of sulphur and fifty gallons of water.

The above described spraying of an orchard will help to keep the trees healthy and in a condition to produce an annual crop of large and perfect fruit, and with better keeping qualities. It will also lessen the percentage of windfalls, which in a sprayed orchard should not be over twenty per cent of the crop, and thus secure eighty per cent of hand-picked apples.

As to the cost of spraying, I find from the labor reports before me, and from the bills for material for this season's work that it costs about eight cents a tree for all tree applications. This is for an average sized tree when liquid bordeaux is used. Of course this expense can be reduced to about one-half if dust spray is applied. Personally I have but a very limited experience in using the dust spray, but I have closely followed the experiments carried out by the Illinois people, extending over several seasons. The results obtained by the above mentioned experiments tell us plainly that we cannot afford to waste our time and money using anything else but the liquid bordeaux.

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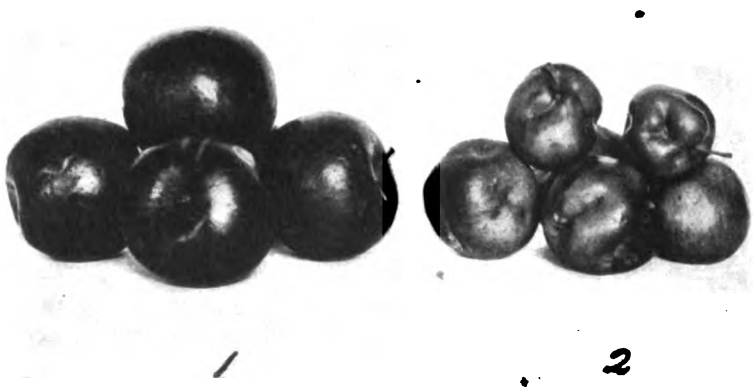
The Benefits of Spraying, and the Comparative Value of Dust and Liquid Applications.

PROF. F. L. WASHBURN, STATE ENTOMOLOGIST, ST. ANTHONY PARK.

We have listened to practical talks on spraying, and I think the majority of us are convinced of the necessity of this work if we are to produce good fruit. The most forcible illustration of the benefits of spraying is afforded by the cuts shown herewith. The first of these represents two sets of Wealthy apples, grown in orchards on the shores of Lake Minnetonka, not two miles apart. The set marked one from the orchard of Mr. Pabody, was sprayed three times and with the ma-



1. Wealthy apple sprayed.
2. Wealthy apple not sprayed.

terials mentioned in his paper, namely: first, spraying just as buds were opening; second, just as first blossoms were falling; third, and last, two weeks later. The compound used was one pound of paris green in every one hundred and sixty gallons of bordeaux. He further laid the foundation for this season's good work by a most vigorous and thorough treatment the year previous. The set of nearly worthless specimens, marked (2), also Wealthys (secured at a store where they were offered for sale, sad to relate), came from an orchard not more than a mile and a half from Mr. Pabody's, an orchard which has never, to the best of my knowledge and belief, been sprayed, and to my certain knowledge has not been treated this season. As Hamlet might well say, were he present, "Look here upon this picture and upon this."

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The disfigurements of the specimens in No. 2 result largely from the work of the plum curculio, which is more destructive to apples in this state now than the codling moth, and could have been prevented by judicious spraying. As far as the codling moth is concerned, it would seem, from some very excellent work recently done against this pest by Prof. Ball, formerly in Utah, that Mr. Pabody might have got equally good results with two or only one spraying, applied in the manner and at the time indicated by this chart. This work against the codling moth, in which one spraying has proven successful, owes its efficacy to the fact, as indicated in the work referred to, that over two-thirds of the first brood of worms and nearly two-thirds of the second brood enter the calyx end—even those hatching from the eggs laid on the sides of the apples for the most part crawling over the surface and entering at the calyx. Now, if a forcible arsenical spray is directed downward into the calyces at a time when the apples are erect, thus enabling the calyx cup to catch and hold the spray, one spraying often insures the saving of nearly or quite ninety per cent or more of the fruit. However, since the plum curculio is our worst apple insect here and, as stated before, requires a strong dose to give him his quietus, doubtless the treatment outlined by Mr. Pabody could not be improved upon.

Speaking of the plum curculio, we have this year sprayed one of the plum orchards at the Experiment Station and protected its fruit against this pest, using eight pounds of arsenate of lead in every one hundred gallons of water. If arsenate of lead is employed this strength can be used with perfect safety. Of the trees experimented upon, some were sprayed three times, namely May 29th, June 17th, June 24th; and some twice, June 17th and June 24th; the remainder of the orchard being left unsprayed as check. The time of the first spraying was when the flower buds were just beginning to show white tips. On June 17th the plums were for the most part the size of small peas.

The labor and material cost on May 29th was four and one-third cents per tree; on June 17th, five and one-half cents per tree; and on June 24th six and three-fourths cents; but when applied on a commercial scale the lowest amount mentioned, four and one-third cents, would be reduced probably by more than one-half.

Plum trees bore poorly this year, and this fact impaired the value of the experiment, yet in making the final count it was found that on the unsprayed trees, or check trees, fifty-three per cent only of the fruit was marketable; on the trees sprayed twice, sixty-two per cent of the plums were marketable; and on the trees sprayed three times, seventy-

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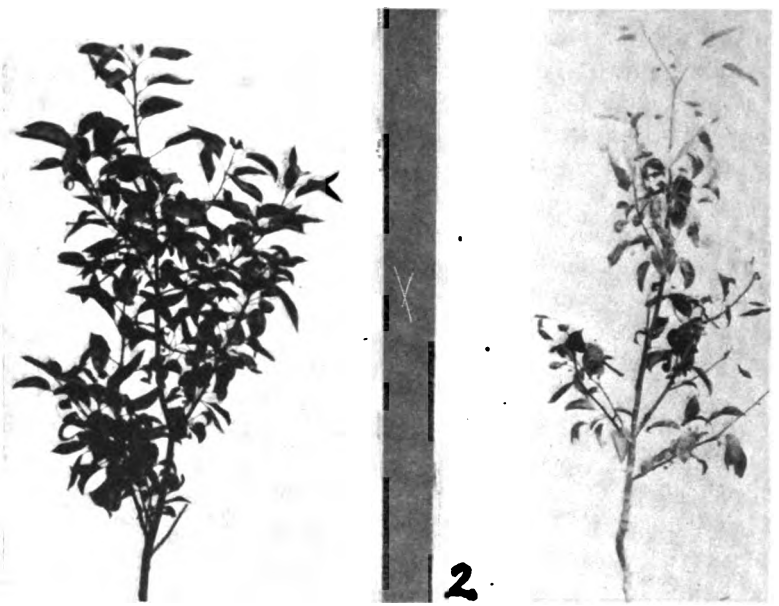
seven per cent of the fruit was marketable. It must be noted in this connection that in counting the fruit everything unmarketable was counted out, and the plum curculio may not have been the flagrant cause in every case.

Turning to another phase of the work, namely, spraying for blight, I will call your attention to the accompanying cut, showing two nursery trees, Martha crabs, Nos. 1 and 2. You all know how prone to sickness and, hence, how undesirable a tree the Martha is. These two trees set in the same nursery row were each about two years old. No.



1. Martha crab in nursery row sprayed with Bordeaux, in 1907.
2. Martha crab in nursery row not sprayed.

1 was sprayed with liquid bordeaux six times; May 23rd with 3-6-50, May 29th with the same, June 12th with 4-4-50, June 26th with 3-3-50, and July 11th and July 27th with the same. The change to the weaker solution was made on account of the strong solution causing some injury. Do not understand me as advocating such a large number of sprayings in practice. In this particular case we were anxious to determine whether we could preserve the Martha in good foliage with bordeaux; hence the frequency of the applications.

Some time ago members of the horticultural society—I have in mind particularly Mr. Elliot—especially asked me to give them some data on the comparative merits of dust and liquid spray. I am not

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going to take the time here to go into details of this experiment. Suffice it to say that we had the use of the Russian orchard at the Experiment Station to carry on this work. The north portion was treated five times with liquid bordeaux and paris green, using eight ounces of the latter in every fifty gallons of bordeaux. The middle portion of the orchard was left unsprayed as a check, and sixty trees on the south end were given a treatment with dry bordeaux and paris green (General formula XX), at the same dates upon which the others were treated. The dust sprayed trees further were given one extra treatment on August 13th. The total count of the apples in the block treated with liquid bordeaux gave eighty-one per cent marketable and nineteen per cent unmarketable, while the dust sprayed trees showed seventy per cent marketable as against thirty per cent unmarketable. In other words, there were sixty-two per cent more marketable apples than unmarketable in the liquid sprayed lot, and only forty per cent more marketable than unmarketable in the dust sprayed. These counts were all made on Duchess trees. Another block of nine different trees sprayed as above with dust, showed only forty-three per cent of marketable apples, while fifty-seven per cent of the fruit was not fit for market. In other words, there were more unmarketable than marketable apples. The causes of the injury which determined the above counts were scab, codling moth and curculio.

As far as our work has gone in this direction we are convinced that where water is abundant and the ground level, liquid bordeaux with paris green, as an agent against curculio, codling moth and scab, is decidedly preferable to the dust spray.

Mr. Bracket: I would like to say a word in favor of white arsenic in preference to paris green. I attended the Wisconsin Horticultural Society meeting, where I got my information. They use white arsenic, which you can buy for from twenty cents to twenty-two cents per pound at the drug store. It is far superior to paris green, because it does not settle, and it makes a far better poison. Mr. Lyman used that mixture in his orchard in the place of paris green. Mr. Stellar did the spraying and used a power sprayer. Mr. Stellar is present, and I would like to have him state what he thinks of the result of using white arsenic in the place of paris green.

Mr. Gottlieb Stellar: It was a brother of mine who did the spraying. I know he sprayed for Mr. Lyman, and he also sprayed at his own place, as well as at my father's and mine. He used this arsenic mixture, and I know that there was a difference in the size and quality of the apples.

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Prof. Washburn: Do not use paris green where you can use arsenate of lead, because arsenic is cheaper. If you use arsenate of lead, it will stay a long time on the leaf.

Mr. Brackett: It takes one pound of white arsenic with four pounds of sal soda boiled in two gallons of water. That amount is sufficient for use with two hundred gallons of bordeaux mixture. This preparation is more effective than when made with paris green.

(For recipe for mixing bordeaux by Mr. Brackett see page 125.)

Cherry Growing at Homer.

J. W. RAMSDEN, HOMER.

The cherry has been grown here for the past forty or more years—first in an experimental way, later on for family and commercial uses.

Homer is situated on the west bank of the Mississippi just south of Winona. The country around here is very rough, consisting of long valleys and quite high elevations, which, in our opinion, is favorable to the culture of tree fruits.

The cherry has done best here where planted on a north or northwest slope, and good drainage is a necessity. They are usually planted at least sixteen by sixteen feet apart, which is close enough. Otherwise the trees will grow too high to conveniently gather the fruit. Very little pruning is done, only enough to keep the lower branches out of the way.

Good cultivation is given the trees for the first few years, to insure a healthy and vigorous growth. Later on they are allowed to sod over, as there is no perceptible difference in the fruitage of those kept in sod or under cultivation, but we think the wood and blossom buds ripen earlier in the fall where the trees stand in sod, thereby preparing themselves better for the Minnesota winter.

The trees are sprayed about the same as apple trees, except that the solution used is not as strong as that generally used for apples. The curculio is the only insect we have to contend with in the cherry orchard.

Many eastern varieties have been tried here and proved failures, and we have not been able to get a sweet cherry that would stand our climate. The Dyehouse, Wragg, Ostheim and Montmorency have all been grown here, but it can not be said successfully. I don't know of any of these varieties that have survived; the trees are all dead to the best of my knowledge.

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The Homer and Early Richmond are the only two varieties now grown here. The Early Richmond ripens here about the 20th of June. The tree is a hardy, vigorous grower, too well known throughout the state to need any particular description.

The Homer ripens from July 4th to 10th and usually lasts two or three weeks from first picking until the crop is gathered. The fruit is darker in color than the Early Richmond, a little larger, better in quality, more prolific and fully as hardy. I don't know of any grower in this vicinity ever losing a tree of either variety from the cold in winter.

The blossom buds are more tender than apple buds, although in the past twenty years there have been but two seasons that Homer and vicinity have not had a fair crop of cherries and often a large crop. As there is an almost unlimited demand for the fruit at a good price, the growers have found it a profitable business. The growing of cherries here is certainly a success.

Fruit Breeding on a Large Scale.

PROF. SAM'L B. GREEN, ST. ANTHONY PARK.

The varieties of fruits that were introduced into this country by the original settlers, while they often proved of value for a few years, have generally been superseded by better kinds that have originated in the section in which they are grown. That portion of the United States commonly known as the central northwest, including the states of Wisconsin, Minnesota, the Dakotas and northern Iowa and Illinois, have had more difficulty in getting varieties of fruits suitable to their conditions than perhaps any other portion of this country. This has been due to their cold winters and especially to an occasional extremely cold winter in which the ground is bare of snow. The climate of this section too is generally drier in summer and not as well adapted to the fruits of western Europe as the portions of the United States lying east or even those sections near the west coast.

One of the most important of these horticultural problems is presented in the apple, the old varieties of which are not successfully grown in this section. About forty years ago Peter Gideon undertook, at Excelsior, Minnesota, to solve this problem by combining the Pyrus baccata and its hybrids with the Pyrus malus. In the course of this work he discovered the Wealthy apple, which is today a leading variety

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over a large extent of country; but the dozen or more other varieties that he sent out as being especially adapted for the cold northwest have proven unsatisfactory in many ways, largely on account of their susceptibility to fire blight. The work which Gideon undertook to do was done in such a thorough way that there is no necessity of repeating it, and the only important variety of apple which he did originate has been of so much value to the state of Minnesota, and elsewhere, that it has repaid a thousand fold all the money the state of Minnesota ever put into the experiment.

Other devoted horticulturists have put their time and means into similar lines of work and often with very little in the way of remuneration except the consciousness of having accomplished something for the general betterment of mankind, which, for most of these men, was reward enough. Among those who have especially benefited the pomology of this section by originating apples is Chas. G. Patten, of Charles City, Iowa, whose most important contribution has been Patten's Greening, but who has also introduced other most excellent varieties in his University and Iowa Beauty.

H. M. Lyman, of Excelsior, Minn., began about thirty years ago to raise seedlings of the Wealthy and devoted quite a portion of his farm, at Excelsior, to an experimental apple orchard. He originated a number of very excellent seedlings that have come from this work. Perhaps the most important and valuable of them all is a winter apple known as the Evelyn.

The Minnesota State Horticultural Society has made a special point of encouraging the raising of seedling apples and to this end offers liberal premiums for desirable seedlings exhibited at its winter meetings. The Minnesota State Agricultural Society also offers liberal premiums for the same object. The Horticultural Society, in addition to these annual premiums, also offers $1,000 for a variety of apple that shall be as hardy as the Duchess, as good a keeper as the Malinda and of as good quality as the Wealthy. There are no limitations on this premium, and the officers of the society would be extremely glad of the chance to award it to any variety fulfilling the requirements, no matter what its source.

As the result of the work of the Horticultural Society and the Horticultural Division of the Experiment Station in encouraging the raising of seedling apples, it is quite common for 150 or 200 plates of good seedlings to be exhibited at the September meeting of the State Agricultural Society. Some of these are of much promise.

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The early settlers of this section found that the plums with which they were familiar in Europe, or in the eastern states, were not hardy here, but that the native plums produced an enormous amount of fruit each year, which was gathered in large quantities by the settlers. This fruit in its native state is perhaps one of the most highly developed of all native fruits, and it was natural for the settlers to select the better trees from the woods and transplant them to their gardens. As a result of this work, and also of the encouragement in the raising of seedling plums, we have quite a list of plums now that are well adapted for this section, and some of them are of very excellent quality and desirable for marketing. A new class of plums is now coming to us as the result of the combining of the native wild plum, P. Americana with the dwarf sandcherry, P. besseyi. From this has come the so-called Compass cherry and a number of other fruits of considerable interest and of probable value. The work of combining our native plum with the Japanese plums, to which it is closely related, has hardly been touched upon, but it seems to offer one of the most promising lines for experiment and the Experiment Station of the University is putting a considerable amount of time onto the work of securing a combination of this sort. We think that from this work we ought to get plums of large size, good quality and perfectly hardy, which will add very much to the pomology of this section.

We find that strawberries in this section are much more liable to be injured in winter than in the states farther east, where the winters are milder, although when the beds are thoroughly protected here with straw they will produce heavy crops, and the experiment station is now trying to obtain a hardier variety of strawberries than we now have by crossing our cultivated kinds with some of the hardier forms.

The cultivated kinds of raspberries must be covered here in winter, or they are liable to be severely injured. It is important to secure hardier sorts, and it seems as if it was probable that this might be obtained by crossing our better cultivated kinds on some of the native sorts which are quite hardy.

The grapes of the pure Labrusca parentage are often successfully cultivated in favorable locations in this section, but in severe locations and in occasional severe winters they are injured unless laid down on the ground and protected, and even then the coats are sometimes nipped. It is desirable to secure a hardier kind of grape that will stand our winters and be good enough in quality for general use. We have made something of a start in this direction by securing crossings between some of our cultivated Labruscas and our native V. riparia, and as a

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result have secured varieties that are perfectly hardy and extremely productive; and while the quality of these grapes is not up to that of the standard Labrusca sorts, yet they are a great addition to the general list of cultivable fruits suitable for our farmers.

What I have outlined will give you, in a general way, some idea of the problems that present themselves to the horticulturists of this section. The forms of fruit we now have have originated more or less by chance and largely through the sacrificing efforts of individuals who have profited very little personally from their labors. Our horticulturists have had in mind for some time the enlargement of the work of fruit breeding, taking it up in a systematic way and on a broad scale under suitable supervision. The matter was presented to our legislature last winter, and an appropriation of $16,000 was secured for the purchase of a farm suitable for this purpose. One hundred acres has been obtained and is being suitably equipped with buildings. On this tract of land we propose to carry on, but on a larger scale and more systematically, the work which has been done heretofore by individuals. We feel that we have had sufficient experience now in this line of endeavor so that we know where and how to work in order to obtain the best results. We shall aim to keep careful records of the work done and to determine general laws underlying this work, which needs so much to be systematized.

How and when should a tree be pruned? Mr. Schutz: We should prune trees at any time of the year except Sunday, but the spring of the year is the time preferred to prune trees.

Mr. Anderson: What time in the spring do you prune?

Mr. Schutz: Almost any time, but I have more time to do the work in the spring than at any other season. I think a man should go over his trees and prune them when he has nothing else to do.

Mr. Anderson: Have you ever had any trouble with sap running?

Mr. Schutz: No, I have not. I always carry some paint and a brush with me and paint over the limb I cut off.

Mr. Anderson: Is it any detriment if the stock does bleed?

Mr. Schutz: I do not find that it makes any appreciable difference.

(Mr. Schutz is here evidently referring to pruning small branches. Secy.).

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Annual Meeting, 1908, Wisconsin State Hort. Society.

J. P. ANDREWS, FARIBAULT, DELEGATE.

The annual convention of the Wisconsin State Horticultural Society at Madison opened February 4th, at two o'clock P. M. Pres. Coe's able address was delivered to a fairly good house of interested horticulturists. The report of the secretary showed the membership to be increasing quite rapidly during the last year or two. That the earnest efforts of the Wisconsin Society is appreciated by the state is indicated by the liberal financial aid with which they are backing them up in their good work, as shown by the treasurer's report.

The report of the committee on the trial orchards was very interesting. Some of those orchards produced very heavy crops of apples last year—one of them something like 2,500 bushels. While it is some expense for the committee to inspect these orchards, it would seem to be one of the very best methods of encouraging fruit growing in the northwest. The society is increasing the number of these orchards each year, which shows they are well pleased with the results they are getting. To establish these orchards, the society leases ground for a term of years and contracts with the owner to furnish the trees and plant them, and gives him directions as to their care, which he in turn agrees to perform. The society has the right to experiment, examine and report on the different varieties, and the owner has all the fruit and finally the orchard, when the society is through with it. This makes a good thing for the farmer who owns the land and furnishes the very best instruction that can be given to all the farmers and planters in these different sections of the state as to the varieties with which they can best succeed, and what they had better let alone; and puts all the experimenting under one management, to be done intelligently and systematically, in the different sections of the state, and the farmers in those localities need not each be to the expense of putting money and time into new and untried varieties, that may be boomed by some tree shark who wants their money, only to find that, like the Northwestern Greening, after they have borne two or three crops, the trees unfortunately die, or, like the Peerless, that live and grow but seldom or never bear a peck of fruit. These trial orchards are surely a step in the right direction.

Tuesday evening the election of officers passed off very quietly, practically all the officers of last year being re-elected.

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Commercial orcharding was the special subject for Wednesday afternoon. One or two counties reported shipping out several car loads of apples—mostly fall and early winter varieties. The Bayfield country, in the extreme northern part of Wisconsin, is thought to be almost perfection for fruit growing by those who live there, but it is only a narrow strip four or five miles wide, along the south side of the lake, thirty-five or forty miles long, and has very poor facilities for getting fruit to market, so that growing small fruits for market there was out of the question. From what we gathered from the papers and discussions, we would agree with Secretary Cranefield that the ideal apple-growing region is the southwest portion of Wisconsin (wonder if the reason why is because it adjoins the great fruit state of Minnesota).

Prof. Taft, of Michigan Agricultural College, gave them a talk on making money from apples. He advised, first, an elevated site for the orchard, to secure good air and water drainage, pruning very moderately each spring, merely taking out the crossing limbs. Their best crops were sprayed from four to seven times, and only one or two per cent of crop was affected by scab. On some varieties last year the spraying increased crop ten to twenty fold.

The banquet Thursday evening was a very enjoyable occasion, with a full house, fine speakers, and an excellent supper—all seemed to be glad they were there.

Delegates from adjoining states were very cordially received Wednesday morning and were exceptionally well cared for, with all the usual courtesies shown throughout the meeting.

Strawberries were next considered. Most favorable varieties were Dunlap, Warfield, Bederwood, Sample, Aroma, Brandywine—some growers were using Dunlap alone and want nothing better. Mr. Kellogg, who has grown strawberries for over fifty years, gave the following good advice: Manure ground and turn it under in fall. Next spring plant potatoes. In fall plow late, after the potatoes are dug, then fit ground thoroughly in spring, and plant strawberries by hand from pan in which is enough water to keep plants moist. Cultivate all summer thoroughly, cut plants out with hoe where too thick, or raking across rows with steel rake will remove the surplus young plants before they are thoroughly rooted.

Grapes doing best in Wisconsin are Moore's Early, Brighton, Agawam, Worden, Concord, and Moore's Diamond. Of currants, the Perfection was mentioned as being larger than Fay at the Michigan Agricultural Station, and Wilder is said to be better and larger than Pomona in Wisconsin.

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Tree Planting on Prairie Farms.

S. B. DETWILER, ASST. PROF. OF FORESTRY, ST. ANTHONY PARK.

Tree planting has always received much attention from prairie farmers in this state, but there are perhaps a few points which may be dwelt upon to the advantage of prospective planters, notwithstanding the fact that so much has already been said and written upon this subject.

A general study of conditions on the proposed planting site should precede actual planting. The success of a plantation depends largely upon the care and judgment used by the planter. A sketch map should first be made, showing the relation of the plantation to the remainder of the farm, particularly its relation to the farmstead. The map should show slopes, streams, buildings and other features, as well as an outline of the proposed planting site. No matter if the work is roughly done, the map will be found very useful. The preparation of such a map gives an excellent opportunity to study the details of the site, the depth and physical condition of the soil, drainage, exposure and other factors in the environment which will affect tree growth. In laying off the planting site, particular care should be taken to make the planting as attractive as possible, both in appearance and location, since this adds a direct money value to the farm which cannot be estimated. A pioneer prairie planter in Kansas stated recently that he considered his shelter belt added at least twenty per cent to the selling price of his farm.

After the preliminaries have been decided, the planter is ready to select the trees best adapted to meet the requirements. The list of trees from which the planter may make his selection varies not only with the section of the state and with the purpose for which the trees are to be used, but also with the particular conditions of the planting site. The planter must know not only what trees are hardy in his locality but also something about the growth and habits of the trees, and he should also thoroughly understand the advantages and disadvantages in the use of each species. In general, it may be said that only the longer-lived trees of slower growth should be used. Quick-growing trees, such as cottonwood, white willow or box elder may be used in emergencies or under special conditions, but these trees soon pass their period of rapid growth, then break and decay badly. For this reason the slower growing trees should be planted with them to take their place when they are gone.

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Evergreens are most desirable for windbreaks and snow-traps, but for commercial plantations the deciduous trees usually outrank them in value in this section, on account of their more rapid growth. Among the best evergreens for general planting is the white pine where conditions are not too severe. In western Minnesota, however, it should be planted only in sheltered locations. It is a good windbreak tree and grows rapidly for a conifer. Scotch pine is a hardy

The forest plantation is one of the most attractive on up-to-date farms.

tree, grows fairly rapidly in early life and is useful for fuel. On account of the thinness of its foliage and the open scraggy head which it forms, it is not very desirable for a windbreak. Its extensive use is not advised, since the Austrian pine is longer lived and equally hardy. The latter tree has a heavy spray of foliage and forms a broad, dense crown and a straight trunk. Red, or Norway, pine grows more rapidly than the Austrian pine, which it resembles in form and appearance; it does not, however, appear to be quite so hardy. Its wood is of special value for the production of farm repair material, poles and dimension stuff. The Norway pine is one of the most desirable conifers for planting in wood lots, but it must be used with care in western Minnesota. Unfortunately nursery stock of this species is difficult to obtain and is consequently high in price.

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Jack pine is a hardy tree, especially adapted to poor and sandy soils. It grows rapidly when young and requires less care than other conifers. It forms a rather open, irregular crown but is in every way better than the Scotch pine, and the seedlings are cheap and easily obtained. The bull pine, or Western yellow pine, is a heavy foliaged tree of moderately rapid growth and appears to be hardy under severe conditions of drouth and winter winds, but it is difficult to transplant. The Black Hills variety appears to be more hardy than the Rocky Mountain form and should be used in prairie planting.

Forest planting would make this an attractive and pleasant home.

One of the best evergreens for windbreaks and for ornamental planting is the white spruce, a tree of rather slow growth but entirely hardy and drouth-resistant. The compact, conical crown gives excellent shelter and is pleasing to the eye, while the wood if treated with preservatives will probably be valuable for posts. Like the bull pine, the Black Hills variety of this tree is also considered the most hardy form, but it is of much slower growth than true white spruce, and the seedlings are higher in price.

European larch is probably the most profitable conifer for commercial plantations, and the fine network of branches makes an excellent windbreak, despite the fact that the leaves fall in the autumn. It does well on dry soil, the average growth in five years being about ten feet in height and an inch to an inch and a half in diameter. On moist, well-drained soil it grows much more rapidly. The wood is durable in contact with the soil and is very useful for posts, telephone poles and repair material. The best results are obtained by mixing larch with white pine. In a plantation, the pine helps to prune the larch, and in the windbreak the denser foliage of the pine aids in protection. The larch is not considered entirely hardy in the northwestern part of the state.

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Red cedar is an extremely hardy tree and furnishes an ideal windbreak but on account of its slow growth should be planted with a more rapid growing tree. The red cedar is objectionable if planted near the orchards on account of a fungus which passes one stage in the "cedar apples" and is thence transferred to the leaves of the apple trees, causing blight.

Douglas spruce, or red fir, is a tree which is worthy of wider planting on the prairies. It ranks with white pine in hardiness and grows faster than white spruce. Although its foliage is less compact than that of the latter, it makes a good windbreak and is a beautiful ornamental tree. The wood lasts well in the ground and is used for many purposes.

A number of other conifers might be mentioned. Norway spruce grows more rapidly than white spruce but is less hardy. Colorado blue spruce is hardy and is an especially valuable ornamental tree on account of its beautiful form and foliage. Dwarf Mugho pine is a shrubby pine, very hardy and of value for a low windbreak.

Among the broad leaved trees, green ash is probably the one of greatest general usefulness to the prairie planter in western Minnesota on account of its great hardiness. It makes a good tree in shelter belt or windbreak and furnishes wood which is valued for fuel, posts and many other uses. It grows fairly rapidly, especially when young.

The usefulness of the white willow and its rapidity of growth are well known. It does well in almost any situation if given a little care and forms a good windbreak. The Russian golden willow is also a hardy tree, and its light-colored twigs make it a desirable ornamental. Another quick-growing tree which deserves mention is the Norway poplar. This is probably a variety of the common cottonwood, but it grows more rapidly and furnishes better lumber. It has an excellent timber form and should be profitable for planting commercially for cheap lumber and fuel.

The American basswood is a long lived tree and grows well in heavy soils, but is not so hardy as the green ash. The wood is used for lumber and box boards, and the tree is valuable both for windbreak purposes and ornament, although sometimes liable to sunscald when first planted. White elm is a deep rooted tree of great hardiness and does well under a variety of soil conditions. It is valuable for protective planting, and its graceful, spreading head makes it especially desirable for a shade tree. The wood is valuable for fuel and cooperage. Hackberry is closely related to the white elm, but its wood is of less value and its growth is slower. It is nearly as

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hardy as the elm and grows in poor, dry soil. Its low, compact crown and its ability to endure shading make it an excellent windbreak tree.

Russian olive and the buffalo berry are hardy shrubs, well suited for low windbreaks and for ornament. The Siberian pea-tree has also proven to be extremely hardy as far north as Manitoba and North Dakota and makes a splendid low windbreak.

Many other deciduous trees have much value to the prairie planter. The Norway and sugar maples do well in southern and central Minnesota but are not adapted to severe locations. White ash is more valuable for commercial planting than green ash, but it is not nearly so hardy. Bur oak and red oak are valuable shade trees but are of too slow growth for general planting. Black walnut and shagbark hickory are worth planting for windbreaks where they are hardy, since, in addition to protection, they furnish a valuable crop of nuts, and their woods are useful for a variety of purposes.

It may be well to state here, on account of the wide publicity recently given to the value of hardy catalpa for forest planting, that the catalpa is not hardy in Minnesota and should not be planted except for ornament, and then only in protected places. Black or yellow locust is an excellent post tree of very rapid growth, which is native to southern Minnesota. It may be planted in protected valleys and slopes in southern Minnesota except in the extreme western part. On account of the locust borer, which is very destructive to locust plantations in the Middle West, its extensive planting is not advised.

Persons wishing information in regard to the best trees to plant will find the following publications of much value:

Bulletin 96, Minnesota Agricultural Experiment Station; Bulletin 102, South Dakota Agricultural Experiment Station; Bulletin 90, Iowa Agricultural Experiment Station; Forest Planting Leaflets, published by the U. S. Forest Service.

Small stock, ten to eighteen inches high, is the best for forest planting, because it is cheaper than larger stock and endures transplanting better. In the case of evergreens, three-year-old transplants are to be preferred, although in favorable situations well rooted seedlings are satisfactory. In the case of willow and the cottonwoods one-year-old cuttings from staminate trees should be used. Broad leafed trees may be raised easily and cheaply in the home nursery. The conifers require special care; hence it does not ordinarily pay to grow them from seed on the farm.

The best time for planting is in the spring as soon as possible after the frost is out of the ground. The site should be plowed and

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worked the fall previous to planting, and the seedlings should be set out just before growth begins in the spring. European larch—and conifers generally—are very sensitive and require special care in transplanting. The roots of the seedlings should not be allowed to dry out; wet burlap or moss should be wrapped around the roots, or the seedlings may be carried to the planting site in buckets half full of water.

The matter of spacing requires special attention from the planter. For commercial plantations, six feet by six feet is about right for most species, but if the tree grows slowly and the soil is poor, a spacing of five feet by five feet, or four feet by six feet may be more desirable. For a good windbreak, each tree should have sufficient room to develop a low, broad crown. In the case of spruce and red

Unsuccessful orchard—a good windbreak would have saved it.

cedar, a spacing of eight feet in the row is not too close, but with other trees it is better to plant them ten to twelve, or even sixteen feet apart in the row. A spacing of four to six feet apart in the row may be used if the planter has the courage to cut out half of the trees before they begin to crowd. The best windbreak is made by planting a double row of trees or by forming a shelter belt of several rows. In this case two or more species should be planted, and the most rapid growing species should be set on the windward side. The rows should be fifteen to twenty feet apart, and the trees in each row should "break joints," i. e., the trees in one row should stand opposite the spaces in the other.

One often hears the objection raised, that a windbreak causes snowdrifts around the buildings. A low windbreak planted 100 feet to the windward of the main break will cause the snow to lodge in the open space between. A snow trap of this kind is said to be very effective.

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It will pay to give the windbreak or plantation thorough cultivation four or five times each season after planting. Where conditions are severe, it may be necessary to cultivate for five years or more, but usually two or three years will suffice.

Fire and cattle damage the forest plantation even more than they damage the natural woodlot and should be kept out of those plantations. In the case of insect attack, special measures if taken in time will save the trees. In the case of groves and plantations, a light thinning should be made when the trees have reached the age of ten or twelve years, in order that the best trees may have sufficient room for growth. These improvement thinnings should be repeated every eight or ten years until the final harvest.

A successful orchard, due to protection from the wind.

With a little careful management the prairie farmer should be able to secure a valuable stand of timber which will more than repay him for the trouble besides affording him comfort and pleasure.

Mr. C. S. Harrison (Neb.): I want to say of the bull ponderosa pine that I have by experiment found out this fact: they should be that way we do not lose over five per cent; and when two years old we break the root, and we can then handle them very readily, and in that way we do not lose over five per cent, and when two years old they can be put out, and I will guarantee there is no need of losing over two per cent in transplanting. You want to make a distinction between the seeds gathered in the foothills of Colorado and those gathered in the Black Hills. I believe it will endure more hardship than any other tree.

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Mr. Geo. J. Kellogg (Wis.): Touching the European larch, I planted twenty-two years ago a number of trees, and they have increased nearly an inch in diameter every year, and they have attained a height of seventy to eighty feet. It was said we could not raise white pine, but they have done well although the growth is less. These larch will not do for telephone poles because the wood is too hard, and the climbers do not like them.

The President: It occurred to me while Prof. Detwiler was talking that here is a professor of forestry, something that is very recent indeed in this country, but we have professors of all kinds. Indeed, in traveling through the south last winter I saw a sign, "Eben Jones, Professor of Odd Jobs!" (Laughter). Forestry education has reached that point where we must have professors of forestry, and you have had a sample presented to you today of what a professorship in forestry implies, and how broad and deep must be his knowledge of tree growing before he can acquire that title.

Can the Farmer's Orchard be Made Profitable?

THOS. E. CASHMAN, OWATONNA.

(So. Minn. Hort. Society.)

There was a time when orcharding in Minnesota was looked upon with much uncertainty, and people were loth to spend even a small sum of money for apple and plum trees, for their experience along the line of fruit culture was very discouraging.

Our early pioneers who came from a more genial climate where fruit could be raised in abundance spent liberally of their hard earned cash for trees of eastern varieties, set them out as best they knew, watched them grow and flourish until the first unfavorable winter came, when they would turn up dead in the spring. Not knowing the true cause, they would usually try again and again with the same disastrous results until finally Mr. Planter began to realize with much sorrow that while Minnesota was one of the most fertile and productive states in the union in the growth of cereals, grasses, etc., it was not adapted to fruit growing or, at least, not to growing the varieties that were raised farther east and south.

The United States government, realizing that something had to be done, sent Prof. Budd, of Ames, Ia., to Northern Russia to secure varieties grown in that cold country. Prof. Budd was

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a professional in his line and selected hundreds of the hardiest and most profitable varieties of apples then growing in Northern Russia and distributed a number of each among the experimental stations in Wisconsin, Iowa and Minnesota, and from that selection came the first light of day as far as fruit growing was concerned in Minnesota.

Of the varieties brought over by Prof. Budd, the Duchess, Hibernal, Anisim and Longfield were the most valuable for our climate, and while the varieties do not compare with the commercial varieties of the East they were and are at the present time very acceptable; for the planter has learned that at least the Duchess and Hibernal can be depended upon to stand the most severe tests when properly handled.

While all this testing of Russian and Eastern varieties was going on, there were a few enterprising people who were making a study of the laws of adaptation and were planting seeds of the then hardiest known varieties, while others would save and plant seeds of all varieties that came within their reach, and the consequences are there are thousands of seedlings which have survived the winter's blasts for years, growing and bearing very palatable fruit that will keep well into the winter, and quite a few of them from eight to ten months. These promising sorts are now being thoroughly tested by the various experimental stations, and it will be but a short time until a great many of them will be widely disseminated, and Minnesota will be known as one of the most profitable fruit growing states in the union, thanks to the many persistent horticulturists who worked with such untiring zeal to accomplish this end.

We should all be liberal in our praise for such men as Peter M. Gideon, the originator of the Wealthy, Peter and a number of other varieties, who sacrificed his own interests that he might do something for his fellowman. And I would not do justice to this article, if I failed to mention the Burbank of the Middle West, Mr. Chas. G. Patten, of Charles City, Ia., who by close study and careful selection has given more valuable varieties of the apple and the plum to Iowa, Minnesota, Wisconsin, the Dakotas and Canada than any other one man who has lived in this cold climate.

Countless others have contributed to the profitable orchard list, and at last we can confidently say, and with a great deal of enthusiasm, that the farm orchard can be and has been made

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profitable. But in order to succeed with the growing of trees, the same intelligent care must be exercised as in other lines of farming; for instance, the varieties best adapted to each particular locality must be selected, and we must be very certain that they are properly grown and under climatic conditions similar to those in which you intend to plant them; see that they reach you in good condition—and when in your possession, Mr. Planter, be sure that you do your part!

Select the spot on your farm that is best adapted to apple growing, plant your trees deep and solid, and if you do not plant them at least twenty-four inches deep, you must mulch each winter to prevent alternate thawing and freezing of the roots.

The cause of most hardy trees dying after they have become established is root-killing, and I believe it can be prevented by deep planting or mulching each winter. Plant your trees on high ground, for they will not stand wet feet and on any incline, except to the south. If you have no high ground, you can attain the desired results by tile draining. Keep your trees properly trimmed, and when they begin to bear spray with Bordeaux mixture two or three times eaeh scason, and if the fruit is properly handled more money can be made over and above all expenses from one acre of ground planted to apple trees than a like acre planted to any other farm crop—not saying anything about the enhancement in value to property or the ornamentation that the trees give to the home surroundings, the pleasure and comfort derived from seeing the trees blossom out in the spring and the apples develop and ripen in the fall, and the healthfulness they will give to the loved ones sitting around the fireside in winter, eating apples grown on the trees that father planted and which have become a monument to his thrift and industry.

Experience is the best teacher, and countless numbers of Minnesota, Wisconsin and Iowa settlers have profited by experience to such an extent that they are now producing large quantities of fine, well flavored and fairly good-keeping apples.

Fruit growing on the farm can be and is made profitable in Minnesota, Wisconsin and Iowa and parts of the Dakotas, and it is only a question of a short time until fruit growing, especially in this locality, will be our foremost industry.

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Extracts from 1907 Annual Report, Excelsior Fruit Grower's Association.

G. H. BOOTH, LAKE CITY, MANAGER.

To a large degree the success of last year (1907) was due to the red raspberry crop. This was of good quality and lasted from July 15 to Aug. 30, the close of the season. On twenty-six days the average price for the day was less than $2, and on nineteen days it was above $2 per case. The highest average was $3.

The first black raspberries were brought in on July 26, and the average for the day was $2.56. The last case was brought in on Aug. 16, on which day the average was $2.50. On about half of the days the black raspberries averaged $2.50 or more; and on the other half they varied from $2.39 to $2.50.

Strawberries began on July 1 and ended on the 25th. The highest average was $3.48 for the 24-quart cases and the lowest was on the day when the express company missed connections and sold them all in Minneapolis. The average on this day was $1.34 per case. The strawberry crop seems to start in well, but it does not hold out like the raspberry. Something usually happens each year to bring down the receipts or to kill out the plants. We consider the strawberry crop one of the most profitable and at the same time one of the most uncertain of all our crops. It gives the manager more trouble than all the rest put together.

Currants began on July 12 and ended on Aug. 16. The price was very high this last year and averaged as high as $3.00 per case. There is more money per acre from currants than we usually figure on. It can be made one of the most profitable and surest of all our crops.

The first gooseberries came in on July 9 and averaged $3.37 per case. The last came in on the eighth of August and averaged $3.00 per case. The supply of gooseberries was not nearly enough to fill the orders and has not been for a couple of years. We think there is more money in the gooseberry than the members are getting out of it and would be glad to see it raised more extensively. We do not think the members of the association have enough of a variety to make the most possible from the business. Each one should have something to bring in every day all through the season. In this way the failure of any one fruit would not spoil the profits. Keep something going all the time, every day.

Blackberries began on Aug. 12, and ended on Aug. 30. The highest price averaged was $3.50 and the lowest was $3.12 for 24

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quarts. At the close of the season 16s were selling at $2.50 and 24 pints at $2.00 and $2.25. The blackberries are the most disappointing to the manager in respect to the supply. There are not enough to supply all the customers, and the supply cannot be estimated ahead. It comes in very irregularly and when you are not looking for it. There is money in this crop if you can raise it.

Apples began Aug. 14, right after the heavy wind storm, and sold all the way from $1.50 down to 75 cents. All kinds, sizes and grades of apples were brought in and each lot had to be sold on its own merit.

Plums and tomatoes were a failure this season as far as we were concerned. There was nothing doing in these lines.

Your manager is able to report that the business of the association was carried on during the past year at a cost of only 5 per cent. Considering the discouraging outlook at the beginning of the season, this is a fortunate showing indeed. The financial statement is as follows:

Received from all sales during 1907..... $12,661.16

Report of Minnesota Rose Society for 1907.

MRS. F. H. GIBBS, SEC'Y.

This is the first time we have given a report at this meeting, because we became an auxiliary only last February. I think it was two years ago that I spoke to our members about becoming an auxiliary of the horticultural society. They said they did not want to have anything to do with it because you would swallow us up in a little while. I have known Prof. Green for some time, and Mr. Latham for a long time. Prof. Green sometimes gives us some very good advice; and I think he practices what he preaches. He often told us it would be a good thing to take a four-mile walk before breakfast every day, and I often get a chance to see him doing it, but he usually goes so fast that there is no opportunity to speak to him. There was a remark made during the meeting about "going some," and he usually is going some. If somebody will keep an eye on Prof. Green, I will keep a still watch on Mr. Latham, and I think in that way we will get along very nicely. We were organized four years ago at Excelsior and have had four shows since that time. A year and a half ago I became secretary. We were indebted then to quite an extent, and it worried us considerably. I did not expect then to become secretary, but when I did I thought there was a great deal of work to do. We had an exhibit at the fair, but we did not get a prize because they did not know anything about the Rose Society, but they fixed up a place for us where we could have an exhibit. We believe we are on the right side of the fair managers so we can compete for a prize next year, and if we can only keep track of Prof. Green next year we may be "going some," and, as I said, I will watch Mr. Latham, and I think by another year the Rose Society will do something better than it did this year, although we are now in very good standing. (Applause.)

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SECRETARY'S CORNER

ANNUAL MEMBERS FOR 1908.—The membership roll at this date, March 25th, shows 2260 names, which, considering the conditions generally throughout the rural districts of the state at least, is an excellent and unexpectedly good showing. The number is 300 in excess of a year ago at the same date.

DELEGATE TO WISCONSIN MEETING.—Unexpected happenings interfered with the attendance of the delegate selected to represent our society at the annual meeting of the Wisconsin society, Mr. R. A. Wright, of Excelsior, and Mr. J. P. Andrews, of Faribault, kindly consented at the last on short notice to take his place. Mr. Andrews' report of the meeting appears in this number.

HANSEN'S NEW FRUITS.—Reference has previously been made in our monthly to the new fruits originated by Prof. N. E. Hansen and now offered for trial to the general public. The list includes a number of plum hybrids, sand cherry hybrids, hardy raspberries, strawberries, etc. Particular mention might be made of a half breed plum, a cross between the Prunus Americana and the apricot plum of China which Professor Hansen has named the Hanska. He notes particularly its extraordinary growth, three year old trees attaining the height of twelve feet. Those interested in these new productions can learn more about them by sending to Prof. N. E. Hansen, Brookings, S. D., for a descriptive list.

NO PLANT PREMIUMS AFTER APRIL 1ST.—According to the regulations provided in connection with the sending out of plant premiums to our members, all such applications must be made prior to April 1st, and this rule must be strictly adhered to. Please do not send any further applications for premiums after this date. These plant premiums are given for the purpose of increasing the interest of the members in experimental work, and not so much to provide them with some new thing, yet of course, that is the ultimate result, and much of the material that has been sent out heretofore is proving to be profitable, not only in an ornamental but even in an economic sense. Please do not overlook this important feature of the work of the society.

AUXILIARY SOCIETIES.—There are now connected with this association quite a number of auxiliary societies of which here follows a list giving the name of the auxiliary and number of members for 1908 to date:

Rock County Hort. Society, 13;
Southern Minn. Hort. Society, 53;
Minn. State Bee-Keepers' Society, 39;
Minn. Rose Society, 57;
N. D. State Hort. Society, 165;
Kandiyohi Hort. Society, 33;
Minn. State Forestry Asso., 26;
McLeod Co. Hort. Society, 5.

SEED FOR THE PRIZE APPLE SEEDLING CONTEST.—A small quantity of apple seed has been secured from several sources to be sent out at once to those of our members who have not been able to secure any and are interested to take part in this contest, or, if they have already done so to some extent, to take further part in the contest for the prizes to the amount of $700, offered to con-

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testants in this and neighboring states. For full particulars as to this contest see page 34 of the 1906 report or send to the secretary. The seed offered is from choice specimens of known varieties of apples, and each package will give the necessary information as to where the apples from which this seed was taken were grown and what variety, facts that are necessary to know in connection with this contest. Members can secure this seed at the price of ten cents a package of twenty-five seeds, three packages for twenty-five cents. It should be ordered *at once*. After receiving, lay between two pieces of wet cloth with moist earth above and below, and place on the north side of the house for a little while, as it would be an advantage for it to have an opportunity to freeze before planting if possible.

LIST OF NAMES —of those who have sent in new members since the publication of the last list, under date of Jan. 26th, up to and including March 24th.

N. J. Trenham, Alexandria, 1; John Vandick, Spiritwood, N. D., 1; P. H. Foote, St. Paul, 2; Jewell Nursery Co., Lake City, 7; N. C. Olson, Hoople, N. D., 1; J. E. Stryker, St. Paul, 1; L. Z Smith, Mankato, 2; Clinton Falls Nursery, Owatonna, 3; Chas. H. Taylor, St. Paul, 3; Lyon Co. Evergreen Nursery, Cottonwood, 14; M. J. Mosher, Great Falls, Mont., 6; M. C. Bunnell, Newport, 1; C. A. Youngberg, Cannon Falls, 1; Fred Cowles, West Concord, 1; John Olson, Braham, 1; Aug. Engel, Alexandria, 1; Daniel Wilson, Caledonia, N. D., 1; N. E. Lostegaard, Lansing, 1; A. J. Wampler, White Bear, 1; F. B. McLeran, Farmers' Institute, 43; Gust Johnson, Excelsior, 4; Leonhard Fritze, Claremont, 1; O. C. Chase, Fergus Falls, 1; R. A. Schutz, Farmers' Inst., 183; V. A. Neil, Mound, 1; S. H. Drum, Waseca, 1; S. H. Kenney, Waterville, 7; C. E. Torgrimson, Deering, N.D., 1; J. S. Decker, Austin, 1; A. Brackett, Farmers Inst., 139; J. S. Korista Silver Lake, 1; J. M. Stowe, Davidson, Sask., 1; A. E. Wickstrom, Anoka, 1; J. Hildremyr, Petersburg, N. D. 1; L. R. Swift, St. Cloud, 1; O. H. O'Neill, St. Paul, 1; John Jager, Minneapolis, 1; Theo. Torgerson, St. Joseph, Wis., 1; W. A. Brown, Bigfork, 1; J. P. Andrews, Fairbault, 8; A. L. Wood, Rothsay, 1; Geo. Batho, Winnipeg, Man., 1; Mrs. E. A. Currie, Merriam Park, 1; J. Bisbee, Madelia, 1; I. W. Pond, Madelia, 1; J. A. Campion, Fairbault, 1; E. S. Olson, Milan, 1; M. C. Taubert, North Redwood, 1; Forest Henry, Farmers' Inst., 76; Carl Erlandson, Kennedy, 2; C. E. Olson, Perley, 1; H. A. Urseth, Minneapolis, 1.

ADDITIONAL PRIZES FOR SEEDLING APPLES.—The executive board of this society has under consideration a plan to offer money prizes for seedling apples to be grown from seed taken from apples that were the result of hand-fertilization the previous season. To be more explicit, the competitors for these prizes must hand-fertilize by crossing in the blossom between two known varieties, keeping a record of the crosses made, and then saving the seed from any fruit that grows from the blossoms that were so crossed. The seed from this fruit is to be planted, and when the trees growing from this seed come into bearing the fruit they bear is to be exhibited for these prizes. As this process would take some time, it would be a number of years before these prizes would be payable.

The purpose of this notice is to learn from our membership how may (if such prizes were offered) would hand-fertilize apple blossoms this spring for the purpose of entering into this contest, and any who understand the art or would like to undertake to do this are requested to correspond at once with Sec'y. Latham, and if the numbers offering to enter into this contest are sufficient to warrant it due notice can be given in the May Horticulturist. Otherwise it might be well to let the offer go over another year, and in anticipation of the offering of this premium our members could take advantage of the further opportunity that will probably be presented at the next annual meeting to learn the art of cross-fertilization. Demonstration in this fertilizing work has been made now at two successive annual meetings, and many have undoubtedly taken advantage of the opportunity.

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BORDER PLANTING, LORING PARK, MINNEAPOLIS, LOOKING WEST TOWARD HENNEPIN AVE.

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THE MINNESOTA HORTICULTURIST

Vol. 36 MAY, 1908. No. 5

Border Planting.

THEODORE WIRTH, SUPT., MINNEAPOLIS PARKS.

Border planting is the name of the subject allotted to me for a ten minutes discussion. The time allotted is really too short, for the subject is as broad as it is long. True, when I first tried to grasp the idea of a border planting as a gardener's apprentice, some twenty-eight years ago, I came to the conclusion that it was an easy matter to become an artist in what I understood then to be that style of gardening.

The first border I planted was two rows of ageratums and one row of pyrethrum around a narrow bed of geraniums along a path. This was a border planting all right, if border means a ribbon of distinct colors and outlines, a frame around a fixture. I did it well too, even if I say so myself. The lines were true, and the distances as equal as the meter system could make them. I was as proud of my first achievement in this line of gardening as my conception of the proper meaning and intent of border planting was narrow and obscure, but even then it was a beginning, although at least partly in the wrong direction.

I am not the only one that has changed his idea as to what border planting really means. On the contrary, the tendency to broaden out and to enlarge the purpose and the possibilities of those plantings has become universal all over the world, amongst amateurs as well as professionals.

Border planting, as understood today, may answer the following purposes:

1st. To hide and screen undesirable objects, such as buildings, fences, roadways, yards, etc., for which purpose we can draw our material from an almost endless list of trees, shrubs, perennials, annuals and vines.

2nd. To form sheltering windbreaks for other plantings, for which we use rapidly growing trees and shrubs.

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3rd. To establish pleasing connecting skylines between the prevailing horizontal and vertical lines of the ground and the building, and, in some instances, between the ground lines and the green, graceful but abruptly rising lines of an adjoining piece of woodland—for all of which a class of material similar to that already mentioned is available.

4th. To form a pleasant background for a special feature, be it a lawn, a garden, a vista, etc., for which we can use all kinds of evergreens, deciduous shrubs, herbaceous perennials and other material.

5th. To form a part or the enclosure of a garden proper. This is the old fashioned herbaceous border of grandmother's time.

There may be other demands for border planting, but those mentioned comprise the principal objects achieved through proper application.

Neighbors should be neighborly, and we have no better opportunity to show our respect for our neighbor and good will towards men than by making our home grounds attractive. We may have a legal right to neglect our own yards as we see fit, but we have no moral right to offend our neighbors or disfigure the whole neighborhood through such neglect. We must not only place our service buildings so as not to obstruct our neighbor's view or light, but we ought to try to screen, through proper plantings, everything that in its nakedness and obtrusive, annoying appearance offends our eye.

I know of a fine residence erected within the last nine months facing one of our boulevards. I like the architecture of the building, and am glad to think that the number of fairly good oak trees in the front yard which do not obstruct the open view over the boulevard and the lake will remain, but I hope the owner will not permit much longer the use of those trees on his front lawn to string the washlines every washday to make a public show of the scrupulously clean linen and flannel of his entire household.

Such and other sights you will admit are offensive to all and need not be tolerated if we only will, in justice to ourselves and our neighbors, do the obliterating act with a little planting. Be the subject to be hidden large or small, we have any amount and variety of material to achieve the object from the very beginning. We can plant fast growing trees such as Carolina and other poplars, willows, soft maples, etc., close to the building with the understanding that they will later on be cut out. We can, at the same time, plant trees of slower growth, medium size, better form and longer life, in front of them and enclose the entire planting with a formal or loose natural grouping of native or exotic shrubbery, with scattered herbaceous perennials between

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them, and produce an effect which will be a revelation to ourselves and a pleasure to all that see it. Don't tell me it costs too much, for it doesn't. Any one can work a spade, and if you cannot afford to buy plants you can dig them in the woods, and what prettier effect do you wish to achieve than to reproduce nature's own creation with the inexhaustible supply of young trees, shrubs and herbs from our woods! A screen of foliage of any description is infinitely more beautiful and appropriate in most cases than the best built brick wall or board fence and much less expensive. This much for hiding.

Now for sheltering: Your house may be exposed to prevailing winds or more sunshine than you care for, and so may be a part of your grounds which you might use for certain purposes only it is too windy or too sunny. Well, do a little planting along the same line, and you will achieve wonders.

To show you what I mean by connecting skylines, let me take you on an imaginary trip through some of our best residential streets. Note the many modern buildings of stone, brick, concrete or wood. Assuming that they are all beautiful from an architectural point of view—a statement which I do not wish to make—are you not impressed and often repulsed by the barren nakedness of the surrounding grounds? The abrupt coming together of the horizontal ground lines and the vertical lines of the buildings give to me an impression of stiffness and cold formality which makes me involuntarily investigate whether my hat is on straight, whether my vest buttons are in line and my pants' folds are parallel.

Now take the same building and imagine at its base, below the first floor windows, a broken border planting of medium sized shrubs and flowering plants, with occasional vines on the porch pillars and walls, carrying the garb of foliage, in some places, to the second and third story. Imagine a few shrubs in groups planted at the intersection of walks, at the foot of steps, and maybe even on the lawn if same is spacious enough. Also let us have a few trees. Now let your eye travel over the ground to the building and notice how easy, how gradually and pleasing the lines meet each other, and what an attractive, warm, outdoor reception room you have made out of the cold, uninviting front yard of the undoubtedly splendidly furnished, cosy and hospitable inside home. The grounds around a home are as much a part of the home as any room of the same, and as such we must treat it.

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So far I have considered the effect of planting to please the neighbor and passerby as much as the owner. Now we must consider the owner himself and admit that as he sits on his front porch or looks out of the windows he ought to get for himself the best eye-feast which tasteful gardening affords. All home grounds have their own peculiar features, advantages and disadvantages, and we cannot put down any standard rules except to say that lawns bordered by a planting of

Theo. Wirth, Supt. of City Parks, Minneapolis, Minn.

shrubs and other flowering plants along irregular or formal outlines, as the case may require, will as a rule be more pleasing and attractive than the unbroken lawn stretching from house to sidewalk. Irregular outlines, if following pleasing curves, are more tasteful than the straight lines of hedges.

All we have to do is to consider at time of planting the size of the plant, so that we may not plant the little moss pink, violet or candytuft behind the tall asters, sunflowers, hollyhocks and dahlias. We must at the same time arrange our planting so that we get a fairly even display of blooms during the season, so that the entire planting may be an attraction at all times. You will have plenty of cut flowers for the decoration of the house and plenty to spare for your friends.

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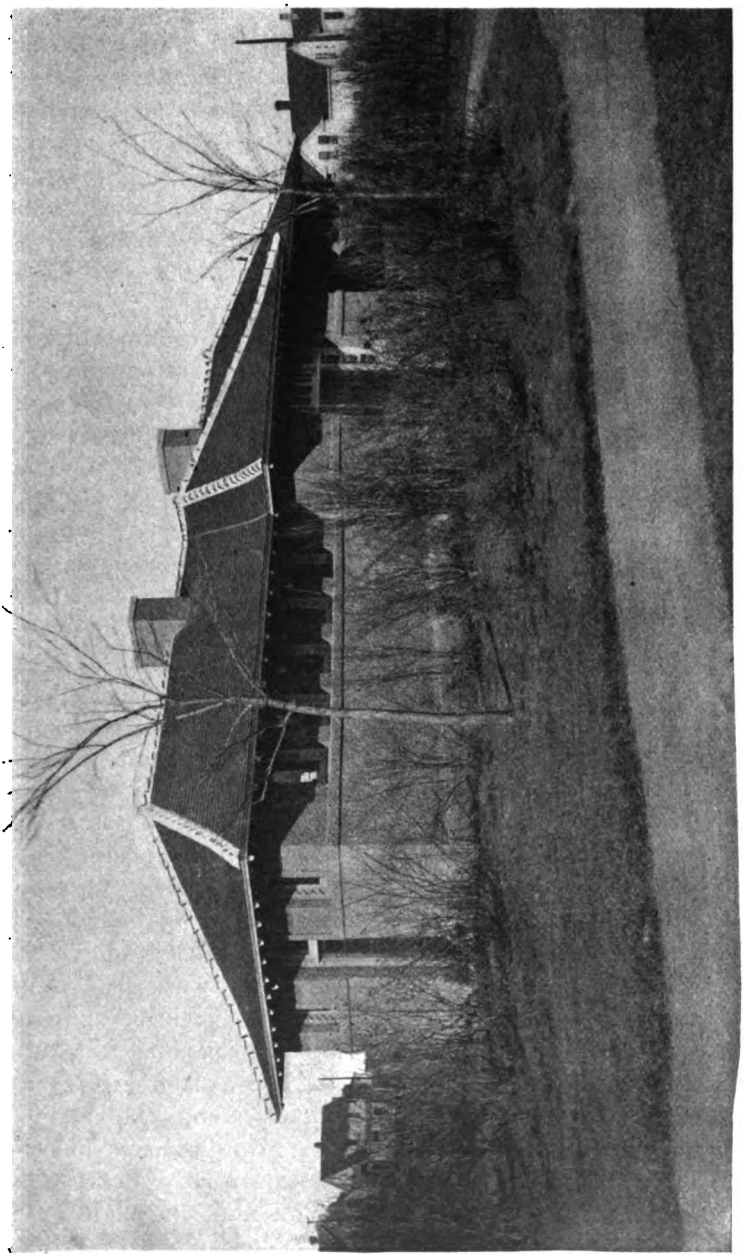

Showing border plantation around Public Building, Powderhorn Lake Park, Minneapolis.

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To end a vista against a background of shrubbery gives in many cases a happy result, unless it obstructs a more desirable view at a farther distance. A group of flower beds or a regular formal garden may well have a border plantation of mixed shrubbery and perennials as a background or for an enclosure on three or on all sides, and such an arrangement is often much more artistic and pleasing than a formal stiff hedge.

Finally, the border plantation which is more universally known than any other is the one we hear described as grandmother's garden, forming a border along a walk, or being a distinct part of a garden, or even a whole garden or a number of beds. The object in view with this planting, and easily obtained, is to have a continuous, ever changing crop of flowers from early spring till late in the fall. Such planting is possible wherever there are a few feet of land to spare. The difference between grandmother's garden of fifty years ago and today is that we have now a much larger assortment of plants available for that purpose, which is due to our progress in hybridizing, reproducing, importing and, in short, to our greater wealth of plants.

According to the space available can we make our planting extensive and our collection complete. A comprehensive border of that kind should contain all the hardy flowering shrubs, between and in front of which we can plant the herbaceous perennials, of which we have such an inexhaustible supply. We can use, in fact, all the flowering plants, for we can seed or plant annuals, biennials, bulbs and anything we wish to grow wherever we find or create an open space.

A favorite remark of the nursery drummer, held out as an inducement to buy, is that such a plantation does not need any attention after once established. This is not so. Such a planting needs constant care based upon careful, intelligent, untiring observation. It does not call for much manual labor but for lots of good judgment and action at the proper time, all of which will readily come to the lover of the garden. It's the love of the work that will make a gardener of any one; without that preaching will be of little avail.

Such plantations need periodical transplanting of some plants, which means the rearrangement of the entire planting every few years. Care must also be taken to prevent free seeding. If that is not done, you will soon get an abundance of some plants and none of others.

I have tried to outline shortly just what I understood border planting to mean, what it is useful for and why more of it should be done for the beautifying of our homes. The plant material, as already stated, can be drawn from all classes of plants, so to speak,

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and we need not even confine ourselves to plants that are absolutely hardy, for we can provide some protection during the winter. This is especially true of herbaceous perennials, which are easily over-wintered with a light protection of leaves, litter or manure, which is best put on only after the ground is frozen to a depth of two to three inches.

That the ground for such plantings should be properly prepared goes without saying, that is, if we want satisfactory results. We can get endless pleasure and untold happiness out of those mixed plantings of evergreen, trees, shrubs, grasses, herbs, bulbs and vines, and why should we not be willing to provide them with a good foothold and congenial conditions, to earn, at least in part, their profusive offerings of foliage, flower and fruit in endless variety and beauty.

A little love and a little work in our gardens make us better—I don't care how good we are without it.

Question. Will burying a dead carcass at the root of an apple tree injure it?

Mr. Schutz: I can say that my neighbor, Thos. Hines, buried a dead sheep at the root of an apple tree, and the tree died a year later of indigestion. (Laughter). I buried a dead dog at the root of an apple tree, but at some little distance from it, and the result was splendid. The tree produced the very best fruit this last summer. I think the tree bore the best apples we ever had, and I laid it all to the dog.

Mr. Johnson: I lost my dog. Where did you get the one you buried? (Laughter.)

Mr. Schutz: It was during the time of the hog cholera, and it was serious business to let a dog run at large.

Mr. Philips: I know a man who had a steer that died, and he buried him near a Duchess apple tree, and it has never hurt the tree.

Prof. Hanson: A dead dog might injure the bark of a tree.

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The Norway Poplar.

BY PROF. SAMUEL B. GREEN.

Dr. C. E. Bessey, the well known botanist, in a recent letter in regard to the Norway poplar, says of it as follows:

"I am very glad indeed to have the specimens which you sent me of the so-called Norway poplar, and I am very much astonished to find that it is nothing more nor less than our old friend, the Carolina poplar, which I now call Populus angulata. I am sending you, under separate cover, a short paper of mine on this Carolina poplar. I was quite unprepared to find that the thing called Norway poplar was absolutely identical in every respect with the Carolina poplar. How in the world the people of the northwest could have been so imposed upon is what I cannot make out? When I say "imposed upon" I refer simply to the name, for as a matter of fact the Carolina poplar is a good thing. One thing about it, however, that I find is very commonly said of it here is, that it is not long lived."

Norway Poplar on place of W. T. Warren, Woodstock, twenty-three years old and sixty-five feet high, and thirty-eight inches around two feet from the ground.

This fully verifies the position which has been taken by the Division of Horticulture and Forestry in regard to this tree. It is undoubtedly a better tree than the ordinary cottonwood and a faster grower than the common Carolina poplar, at least this is our experience with it at St. Anthony Park.

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Commercial Orcharding in Northern Wisconsin.

W. S. HAGER, DE PERE, WIS.

By commercial orchards is meant those that are planted for profit or have been planted as an experiment and have proven a success financially. The test of a commercial orchard is: does it pay a sufficient return on time, money and energy invested? There seems to be an impression among many, even among our members from the southern part of the state, that there are few or none such in the northern part of the state. And yet our experimental orchards have proven what can be done by setting proper varieties.

For the purpose of this paper we will consider northern Wisconsin as that part of the state lying north of a line drawn from Manitowoc to LaCrosse through Lake Winnebago, corresponding in a measure with the state of Minnesota—for if you horticulturists are to get any value from our experience, it must be where conditions are somewhat similar.

In dealing with commercial orchards we will talk mostly of apples, as of course peaches and pears are out of the question, and, excepting the Sturgeon Bay district, there is no extensive planting of cherries. Plums are as yet in the experimental stage—at least they are with me. As to the cause of success of cherries at Sturgeon Bay, there is a difference of opinion. Some of the leading growers there ascribe it to the proximity of Lake Michigan on one side and Sturgeon Bay and Green Bay on the other, but I think the soil has more to do with it than climate.

The items that make for success in an apple orchard are soil and air drainage, varieties, culture, marketing and, last but not least, brains and a determination to succeed.

Soil. The best soil without doubt is a porous clay loam verging toward a sandy texture, such as originally grew maple, elm, linden and beech timber; although many times pine timbered land is equally good. My experience has led me to believe that lime soils are essential.

Site—should be elevated above the surrounding country or rolling, to give sufficient air and soil drainage. Right here I want to say that I consider air drainage, either by elevation or slope of site, to be very important, as bearing on blight and other fungous diseases. However, we have some orchards on comparatively level sites that are doing fairly well. I have made some experiments in tile draining

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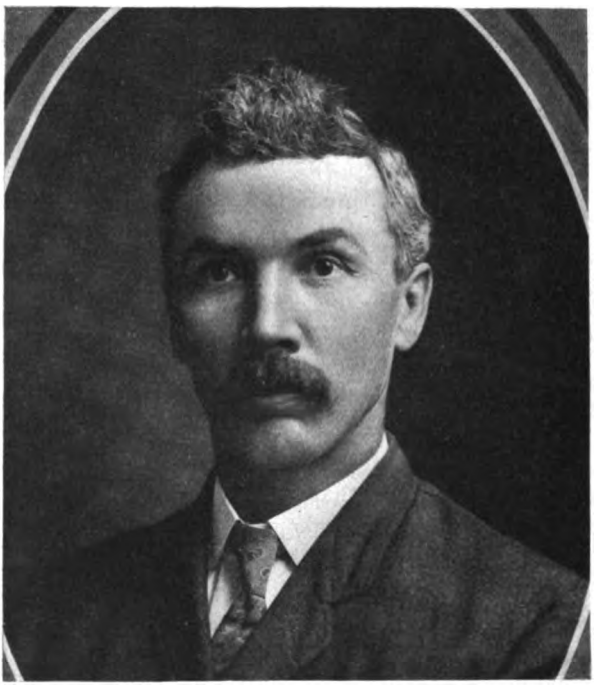
heavy clay land and do not think it of much value, for if you put your tile very deep the water will not get to it, and if shallow the roots from the trees will soon clog them completely, besides the danger of frost wrecking them.

Varieties. Right here I expect to strike trouble, as every grower whom I have approached on the subject has some choice variety, and no two anywhere nearly agree. Every successful grower must and will be governed by what succeeds in his locality and particular soil. However, I think we will nearly all agree that we should confine our



W. S. Hager, DePere, Wis.

choice to fall or early winter sorts. Of such there is no trouble to put at the head that queen of all apples, of which Minnesota ought and I think is justly proud, the Wealthy. A. L. Hatch, of Sturgeon Bay, likes Fameuse and McIntosh Red if on strong soil, but is also a friend, as he ought to be, of the McMahon; Dr. Loope likes Wealthy, Snow and Longfield; and our secretary says, "Don't forget the Hibernal," and I say "Yes, if you cannot grow any other or better kind." At the Wausau trial orchard this season thirty-eight trees of the Hibernal bore 375 bushels, which sold at 75c per bushel. That certainly is

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not bad. I believe though, for the small planter in the extreme north, the Hibernal cannot be too highly recommended. Don't ask about the quality.

My choice of four varieties if I were to set again would be, Wealthy, Longfield, Anisim and Duchess; if markets are such that Duchess would not be advisable, more Wealthy.

Culture. Cultivation in some way is absolutely necessary, either without crop or with some hoe crop. I have usually used the latter and have lately been planting squashes in such manner as will least interfere with two horse cultivation, as I find two horses most convenient and economical.

What *tools?* I do not think that important as long as you cultivate. I never have used the so-called combination of cultivation and mulch system. As I have seen it practised, it seems to me to be a sort of lazy man's excuse for poor cultivation.

Spraying is practised by a few of our larger growers. Others do not think it would pay, while others simply neglect it. As a general thing the newer sections have less need of spraying, yet in all places thinning of fruit is abundantly repaid by the increase in size, quality and quantity, to say nothing of the conservation of vitality of the tree.

Marketing. Selling at the best advantage is sometimes as much of an art as producing. Ordinarily there is a large home demand, if not at picking time, within two months. I have kept Wealthys until the holidays, when I received one dollar and fifty cents per bushel. There were no other home grown apples to be had. In some instances if local markets are not good it is advisable to sell as soon as picked to buyers who have storage. Which way must be determined by conditions. But to the man who has time to devote to seeking markets. I would say keep as long as you safely can and then sell as directly to the consumer as possible. Many of our small growers are getting good prices this way.

Pests. Last put not least, and perhaps the most discouraging because hard to guard against, are mice, rabbits and pilferers. With clean culture and a small mound of earth about the base of the tree over winter, there ordinarily is but little damage done by mice. Yet two years ago I had the mice come on top of snow in March and gnaw the bark from six to eighteen inches above the ground, on the trees of the outside rows. Wire screens would have protected them. But screens are of but small protection from rabbits, for their worst work is done while the snow is deep and they can easily reach the branches. The best methods I find are to trap and snare them.

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Of pilferers, I have several theories, none of which I have proven as yet. Perhaps the best way is to do some quiet watching with an occasional arrest.

Mr. L. W. Prosser: In case of tile drainage, at what depth should the tile be placed?

Mr. Hager: My experience has been it is necessary to put it down for a long way so the roots will not penetrate it, because the soil moved in making the ditch when it is put back is looser and more porous and will allow the roots to penetrate more easily, and if you get it down beyond the depth the roots would naturally go in heavy and soggy clay soil the tile is practically of no value.

Mr. Prosser: I said at what depth?

Mr. Hager: I said don't put it in at all, make a surface drainage. Then the roots cannot block it up.

Dr. A. H. Street: Can't you get sand to cover the top of the tile?

Mr. Hager: That would necessitate hauling the sand and gravel to fill the trenches and in that case you would not need any tile because that would make a channel for the water itself.

Prof. Wm. Robertson: Do the roots ever fill up the tile?

Mr. Hager: If you have not a sufficient amount of water passing through the tile they may fill up, and it is always well to have a certain amount of water passing through.

Mr. George J. Kellogg (Wisconsin): How much did you spray?

Mr. Hager: I do not spray at all. I have not found yet in my experience in northern Wisconsin enough in the way of insects or fungous diseases that it would pay to spray. My experience has been in that part of the country where insects and fungous diseases have not affected us.

Mr. E. A. Smith: The Longfield is not considered a first class commercial apple; it is thin skinned and small, and the commission men do not care for it. Mr. Philips says the McMahon White is one of the best sellers. If a man sets out an orchard for commercial purposes he had better plant only about four varieties, and the Longfield has not been found a good commercial apple.

Mr. Hager: I made the same mistake as many other men have made in setting out an orchard for commercial purposes. I would not advise any one to set out a great number of varieties for a commercial orchard but confine himself to four varieties. If you have a number of varieties you will have a barrel of this and three or four barrels of the other, and commission men will not look at any proposition of that kind. In regard to the Longfield, I am speaking of the home market. Varieties must be selected according to the demand, whether it is for commercial purposes or whether it is simply for the home market; it depends upon the locality.

Mr. W. S. Higbie: He spoke of using two horses to cultivate. I would like to know what tools he uses to get close to the tree.

Mr. Hager: We use the ordinary spring tooth harrow, and I can get so close to the tree that occasionally I bark it.

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Mr. Higbie: Do you have to keep that going from spring to fall at least once or twice a week?

Mr. Hager: Just the same as I cultivate anything else, once or twice a week.

Mr. Higbie: But in heavy sod it would not take hold of it.

Mr. Hager: If I had sod I would use something else.

Mr. Eli Stone: I have used the Acme harrow and cultivator, and I can run close to the tree without injuring it, and it is a nice cultivator to use with two horses.

Conditions of Eastern and Western Orcharding Compared.

J. M. UNDERWOOD, LAKE CITY.

One would suppose that in western New York, where the conditions are most favorable for growing apples, in the home of the Baldwin, the Bellflower and Rhode Island Greening, that apple orchards would be in the height of perfection. Going back to Wayne County, where I was born, I was surprised to find that but a few orchards are in good condition. At one place where I stopped they had an orchard of over 100 Baldwins. The trees were forty feet apart and very large. They had been trimmed up high so as to have plenty of room underneath the lower branches. The orchard had been into sod for many years, but the trees looked healthy. On inquiry, however, I found that they did not produce very much fruit, and it was of inferior quality, and so high from the ground that the apples were harvested with difficulty. I said I would give more for the orchard properly cared for than for all the rest of the farm. The reply was that no one in that neighborhood cared for their orchards, and they did not get any returns to amount to anything. One man as I drove by his place was pruning his trees with an ax, chopping off the large lower limbs in a clumsy manner that any woodsman would be ashamed of.

A Mr. Youman and his two sons, living near Walworth, were said to have a fine orchard, and so I drove out to see it. I found they were progressive horticulturists and farmers. They kept a large herd of the best Holsteins. Their orchards were cultivated to perfection, not a weed and no grass to be seen. Apples, pears and plums were made a specialty, and the most of their fruit was for export.

I said to Mr. Youman, "What is the best thing a young man can do in this country to make a living?

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His reply was, "Raise Baldwin apples."

"But," said I, "I am told by those who have them that they cannot make any money off from them."

He replied, "Then they do not take care of their orchards."

There was only one other orchard in my drive of fifteen miles that day that showed evidence of care and prosperity, and yet Wayne County, and especially along the shores of Lake Ontario, is considered one of the best fruit sections of New York state. I heard of one party living near the lake who had a large peach orchard that is a success.

Near Albany I visited the fruit farm of Geo. A. Powell. He will be remembered by some for his lectures in our farmers' institute course here in Minnesota, on farming. His chief pursuit, however, is horticulture. He writes and lectures on this subject and is one of the largest cultivators of fruits in New York state, for, in addition to his own orchards of 160 acres, he directs the care of a number of fruit farms owned by wealthy men living in New York city. He has an office in the city where he stays winters but spends a good share of his time on his fruit farm in the summer. Of course I was interested to learn how Mr. Powell cared for his orchard, and it gave me great pleasure to ride with him over his grounds and note his methods. The old orchard near the house, planted by his father, is fenced for a hog pasture. He plows the ground, sows it to clover and when it is six to 12 inches high turns in the hogs. They live off the clover, cultivate the soil, help to fertilize the ground and leave it in a loose condition to catch and retain the rainfall and prevent it from going off into the water courses leading to the river. The rest of his orchards are thoroughly cultivated with one exception.

In a block of fine trees in bearing I noticed several rows that were seeded to grass that was being cut for hay. I asked him why he left these trees without cultivation. His reply was that a government official was making a test to see what if any difference it made whether trees were cultivated or seeded down to grass. It was very plain to see that these trees were making less growth than those in the adjoining rows where the ground was cultivated, and their leaves were not as healthy a color and the fruit was smaller in size.

I said to him, "I have been most interested in your orchard to see how you cared for your trees, and I am pleased to know that you believe in cultivation."

He replied, "I most certainly do."

Now for comparison with western orchards: I think they are much the same until we get over to the Pacific coast, except that most

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eastern orchards are older, and in planting their young orchards they seem to have adopted the methods of their forefathers, which was to plant trees and then let them take care of themselves. I think to a considerable extent the same method prevails here in the west, but when we get to the Pacific coast we find that there orchards are under thorough cultivation; and it is the universal rule there that a neglected orchard will soon perish, and that thorough cultivation, plenty of water and fertilizing produces the best results. The principal object in cultivation is to secure moisture. Of course, if you have plenty of moisture without cultivation it would not be necessary to cultivate, except that cultivation, stirring the soil, seems to warm it and produce a better growth of wood, better color of foliage and larger and more perfect fruit. I have never been successful in growing anything in the way of fruit or grain or live stock by neglecting it. I heard of an Irishman who taught his horse to live without eating, but soon after his lesson was learned he died.

I think perhaps one of the most successful methods of cultivating orchards, where it can be adopted, is to fence it for hogs and then turn in enough to serve the purpose. I am told that one hog will cultivate two acres—but don't put wire in their noses. I find that in the east they have many obstacles to overcome and enemies to fight; that there orchards do not look much better than they do here in Minnesota, and that there as here eternal vigilance is the price of success.

A young man asked me this summer where I would advise him to go to grow fruit for market. I told him I thought that there were favorable locations here in Minnesota where he could make as much or more money than any other place I know of. With our knowledge of the best varieties to plant, gained by many years of experience, an intelligent selection of location and proper care of the trees, we can grow fruit here that is excellent in quality—and here there is a good market. Our climate is healthful and imparts that element to the highly-colored, richly-flavored, juicy apples. We have fewer insect enemies to combat, and if we will only provide our trees with food and drink we may expect them to keep in good condition and secure profitable returns.

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Forestry Considered Practically and Theoretically.

PLATT. B. WALKER, JR., MINNEAPOLIS.

I chose as an occupation one which has brought me in direct touch with the lumber industry. As a result of associating with practical loggers and lumbermen, at first I acquired a prejudice amounting almost to contempt for those active in theoretical forestry. As a class I presumed that they were cranks who had no business of their own to look after because they devoted so much of their time to interfering with other people's affairs. It also appeared to me that while really plotting to harass and ruin the lumbermen, they were frantically appealing to the same individuals under the sympathetic plea of "Woodman, spare the tree."

The practical lumbermen of early days did an injustice to many well meaning people who were trying to insure the future interests of our country by preserving the enormous timber resources. Their methods were often ill advised and their knowledge of practical lumbering limited. While advancing theories which amounted in actual practice to confiscation, they had never themselves seen a pine tree and really knew nothing about the economical preservation of forests. Many of them made the very glaring error of presuming that forests, like our mineral wealth, could be husbanded for innumerable generations to come. The fallen monarchs tell a story of wasted opportunities and valuable assets which have only served to enrich mother earth. The growing tree must be harvested, like other products of the soil, at the proper time, or it will begin to deteriorate and eventually be worthless. Probably one-half the timber cut between the years 1870 and 1890 in the territory to the north of us would if it had been left standing until today be comparatively worthless. A gentleman of means some years ago acquired a valuable tract of pine timber in Michigan which he elected to keep, believing that the time would come when it would be immensely valuable. Finally when this tract was offered for sale, the cruisers who were sent to report on its condition found that a good share of it had years before reached its maturity, and instead of a gold mine as the owner had anticipated he eventually disposed of his decaying timber at considerable less than he had been offered many years before.

A constant succession of forests have come and gone during prehistoric ages. Our northern pine will mature and begin to decay at from 75 to 100 years of age. In some of the milder climates near the

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sea coast, timber is grown in from forty to fifty years. Not long ago I enjoyed an extensive trip up and down the old historic Chesapeake Bay in company with a federal soldier who during the late unpleasantness had campaigned that country. He pointed out many places he remembered as entirely barren of any forest growth at that time, yet today there is a magnificent stand of southern pine waiting for the logger. In fifty years those trees, if left unmolested, will be fallen or decaying, and the only hope for posterity is to protect and preserve a new growth.

It was generally conceded by the lumbermen that the object sought to be obtained by theoretical forestry was to confiscate private property without proper compensation. The theoretical forester and the practical lumberman are getting closer together and are now working in harmony, with very few vital differences of opinion. It is useless to try to preserve the matured trees for posterity, but by the enforcement of reasonable rules and regulations it is possible to provide for a succession of new forests. Along this line the state and federal governments are providing that five per cent of the timber on tracts sold shall be left as a nucleus for and to protect a new growth. Competent officials select those to be left standing. The refuse which has caused our fearful forest fires is to be taken care of. These reforms have come about gradually and are only possible by reason of the realization of the limited amount remaining. The expense of the proper care and preservation of our forests if inaugurated in the early days would have increased the cost of lumber far in excess of what the pioneers could have paid. Public sentiment would never have permitted the imposition of a tax in the shape of higher prices, even for so laudable a cause.

There is little to be expected from individual efforts looking to reforesting our cut-over lands. The state and national governments must assume this duty if there is to be any considerable tree planting as a source of future lumber supply. Even eliminating unforeseen emergencies, no private owner of land can engage in the cultivation of trees, even of the most rapidly growing kind, and expect to produce a reasonable profit for his children or grandchildren in return for his investment and labor. He who today might be tempted to engage in such enterprises from philantropic motives is deterred by the knowledge that the local authorities will tax his land on an equal or higher basis than that of the farmer who raises seventy-five or more annual crops to his one, with the result that long before the trees are ready for market they will have cost double, or more, the amount they will bring when manufactured into lumber.

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Unjust taxation has done more than anything else to denude the forests of our northern states. Adventurers early located in our northern forests, elected themselves to all the county offices and systematically levied taxation for the construction of roads, courthouses, schools, in addition to their highly remunerative salaries, all of which were assessed against the non-resident timber owners. To protect themselves against this highway robbery, the lumberman cut his timber off this land as rapidly as possible and let the barren waste revert to the state. Much of this land can be used for experimental purposes and, I believe, will produce a substantial growth of timber for the future. Shrewd speculators, however, have secured large tracts of this land and are inducing settlers to buy small tracts for farming purposes. Nothing is more desolate than one of these farms after it has been cultivated a few years. With plenty of moisture one of these farms will produce fair crops for a year or two, but after that the soil is almost sterile, and the unfortunate who has put his all into this venture is marooned on a desert waste.

A year ago Mr. T. B. Walker, the well known lumberman and timber owner, favored this association with an account of his experiments in forestry and outlined some of his plans and ambitions for the future. During the last ten years, Mr. Walker has acquired over 650,000 acres of timber land in northern California, on which grow in immense quantities the famous sugar and yellow pine. These trees grow to enormous height and large diameter, many producing sixteen 16-foot logs, measuring from 10 to 20 feet in circumference. On this tract alone it is estimated that there is as much standing timber as there is now growing in the entire state of Minnesota. Mr. Walker sets aside yearly a certain sum per acre for the protection of the trees from fire. Much of this land is good for grazing, and by co-operating with the ranchmen and permitting their sheep to roam on his land Mr. Walker has enlisted a large number of volunteer fire wardens. The state and local authorities have so far adopted the policy of reasonable taxation, which if continued will permit the owner to hold this timber for the future. It is Mr. Walker's intention to erect a number of mills, but in cutting the timber only matured trees will be selected. With the very large quantity which he owns, by the time the logger has gone over the entire tract the second growth will produce as large if not a larger amount of standing timber than it contains today. By protecting the young trees there is no reason why this forest can not be perpetuated, yet producing sufficient material for the manufacture of 200,000,000 feet or more a year. A hundred years from now, if

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this plan is carried out, the timber on this tract will be almost priceless. Unfortunately, there are only a few such tracts of timber in this country or private individuals who are not intent upon realizing the largest amount of money in the shortest time from their holdings. The government has taken over large areas of forest reserve, and it is to be hoped that the timber thereon will be used in a practical manner for the purpose of supplying our present needs and also to insure posterity an equal blessing.

The work which has been carried on by the various forestry associations and their allies, the horticultural societies, has done much to encourage the government to promote the science of practical forestry. Two years ago the National Lumber Manufacturers' Association held their annual gathering in Washington. Professor Pinchot, the head of the forestry department, addressed the convention. In answer to questions he gave much valuable information which a number of lumbermen present declared was worth a great deal of money to them. A southern timber land owner asked why his cut-over timber lands did not reproduce the famous loblolly pine but persistently grew up with a species of scrubby, worthless trees. Mr. Pinchot asked if hogs had not been permitted to roam over this land. When assured that such was the fact, he stated that these animals devoured the sweet shoots of the loblolly pine, but that the bastard variety were too bitter for them to eat. A Michigan lumberman desired to know why certain hardwood never reproduced itself and was informed that the cause doubtless resulted from the squirrels appropriating the supply of nuts which nature had intended to reproduce those trees.

The subject of forestry as pertaining to commercial lumber is a very important one and could well consume an evening in profitable discussion. As I have been warned that my paper must be brief, I will close without going into further detail.

About Oliver Gibbs.

PROF. S. B. GREEN, ST. ANTHONY PARK.

The former secretary of the Minnesota Horticultural Society, Oliver Gibbs, has found it necessary to locate in Florida on account of his health. It was my pleasure to visit him there last month (in February). He is located at Melbourne Beach, which is rather far down on the East Florida coast and on the east side of the Indian River. Here he has about twenty acres. The soil is a whitish sand

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and very loose. The land is naturally covered with a wild sub-tropical vegetation containing much palmetto and a wide variety of thorny plants. Mr. Gibbs has cleared much of this land.

The general practice in this vicinity is to burn all the trash that is cleared off. Where he has cleared the land he has piled the trash and allows it to decay and then works the humus into the soil, which it needs very much.

The winds from the Atlantic in the autumn are often very destructive to vegetation, and he has protected against this wind by the erection of wooden paling fence, twenty feet high, on the east side of each tract of five acres. He has planted out a small orchard of Japan persimmon with peaches between. He has a nice start in guavas, which do especially well in this section. He has also an orchard of oranges and small lots of kumquats, etc. At the time of my visit the watermelons were just pricking through the ground, and Mr. Gibbs had caught his thirty-first skunk. These animals are very destructive to the melon plants, which they dig as soon as they show out of the ground. The skunk of this section is not the large species found on the main land, but is much smaller. Some pineapples are grown in his immediate vicinity, and along the beach he has quite a number of pineapples, and I had the pleasure of picking a bunch of them while there.

I was told that rattlesnakes were abundant in the immediate vicinity and occasionally visit the grounds about the house. However, I did not see any of them nor any of the alligators about which I heard big stories. Fish are abundant in these waters, and I learned that Mr. Gibbs is a very skilled fisherman and thoroughly enjoys the sport. I recognized our northern canvas-back ducks swimming in Indian river, and I am very sure they were a part of the same flock that I saw in Minnesota last autumn.

I had the pleasure of taking a bath from Mr. Gibbs' boat pier at 6 o'clock in the morning. Just before going in swimming, however, he had the effrontery to tell me about the sharks and alligators that were occasionally found in these waters. I expect it was done to try my nerve.

The friends of Mr. Gibbs will be interested to know that his asthma is improving very much in the genial climate of Florida, and while they regret that he is obliged to stay away from us they will be glad to know of his improved health.

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A Third Season in Civic Improvement Work.

MRS. ANNA B. UNDERWOOD, LAKE CITY.

In following the details of the advance one small city has made through three successive years of work, the main idea has been to present methods pursued in such a way that it will prove helpful to other places aiming at civic improvement. The same course might not apply in every case, but the earnest workers of these places would see how a varying line of action might be followed to bring about conditions applicable to their requirements. There is a bit of advice we would offer to others. Perhaps they might be expressed in a series of "don'ts" and "do's." This advice is given for the benefit of organizations composed of women.

"Don'ts."

1st. Don't start in with too large an organization; make sure that all members enlisted are in sympathy with the work. For the sake of numbers, do not urge "kickers" to join.

2nd. Don't plan too much for one season's work, for if you fail to reach the milepost you invite criticism.

3rd. Don't fail to keep in touch with city or town officers. Personal interviews are good to pave the way, followed later by delegations of influential, tax paying, voting citizens to represent public sentiment.

4th. Don't run in debt. Earn your money before you spend it. This will impress the men with your careful businesslike methods.

5th. Don't reply to adverse criticism. Once you have made up your mind you are right, go ahead. Discussion never convinces, and when you succeed in accomplishing what you set out to do (and of course you will) the carping criticisers will be found to have been on your side from the first.

6th. Don't forget the children. They are to be the future citizens and are fine material to work with and should be educated.

"Do's."

1st. Do study practical methods.

2nd. Do try to interest others by giving them something to do.

3rd. Do make your meetings short, interesting and entertaining.

4th. Do keep your temper and remember that soft words turn away wrath.

5th. Do remember that words of commendation go farther than words of criticism.

6th. Do be tactful. If you cannot get things done your own way, try some other. You will soon learn that there is more than one way of accomplishing the same results, and by pursuing this plan you keep people good natured, and you will not be obliged to make plans and carry them out yourself.

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Our Improvement Club gradually awoke to the fact that it was an important factor in accomplishing things. The great success of the previous year, in being able to show something tangible for the season's work, opened up a flood of suggestions as to what should be done at once—and there was enough to warrant an expenditure of an enormous amount of time and labor (unpaid) for the benefit of the public. The reasonableness of the suggestions was acknowledged. Every improvement named ought to be made some time, but which first. The executive committee must decide.

Lake City depot grounds before improvement.

The station grounds had been long ago parked and were always pointed to with pride as one of the beauty spots of the city, and the reputation of having the prettiest railroad park for a place of our size was quite gratifying—and for a long time the people were content, although as soon as the station was left and the visitors' steps turned toward town the contrast was surprising, particularly so when the center of the city was reached and the eyes rested upon a vacant block long ago set aside for a park. The Improvement Club began to hint about bettering conditions and to devise means to bring it about. Nothing could be done without money. Where was it to come from? The members of the city council were interviewed, who reported there were no funds in the treasury but what had already been appropriated and no money in sight until another year. On looking the matter up thoroughly it was found that it would require at least $1,000.00 to do the grading, lay paths through and put down sidewalks around the park. The old saying "money talks" is a trite one, and we had proved its truth before. It was decided to canvass the town for money, and a subscription list was circulated. The business men were very loyal

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and gave us tangible assistance. Those whose grounds faced or were in close proximity gave quite liberally, and as the list increased enthusiasm did also, and it was not long before we were sure of the amount.

As the work progressed our Woman's Club (literary) wanted to be identified by giving a sum of money. Some of the fraternal societies of women sent in various sums. Later on twenty iron park seats were donated. To our surprise we found ourselves with about $1,500.00 at our disposal.

Lake City depot grounds after improvement.

How was the money to be spent and by whom? The Improvement Club urged a park board. There was nothing in the constitution and by-laws of the city providing for one. The women claimed there was a state law that would cover the situation. (Incidentally we found there were more women posted on this point than men.) In every community there are always some fearful ones who are much averse to changing conditions from the way they were when they were boys. They are afraid of increasing taxes, and quite occasionally the loudest talkers against increase of taxation do not own a foot of ground or so little that it would be only a matter of a few cents more. Men of this class will talk so loud that unless the question is put to a test what they say will pass for public opinion. They are so sure there is no such law, or sure that there is a law against it, that it requires a large amount of determination on the part of a few to carry the day by pushing the matter and gaining all the information possible. Our city attorney was asked to look up the matter, so we would be sure of the legality of our proceedings, and the state law authorizing the formation of a park board was thoroughly examined. This is the wording of the law:

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An act to provide for the acquisition, improvement and maintenance of public parks and for the appointment of park boards in cities of not more than 10,000 inhabitants.

Be it enacted by the Legislature of the State of Minnesota:

Section 1. That any city of this state, now or hereafter having a population of not more than ten thousand (10,000) inhabitants, is hereby authorized and empowered, in addition to the other powers conferred upon it by law, to acquire by gift, purchase, devise, condemnation or lease, lands within its corporate limits, or lands contiguous to such city, and lying outside of its corporate limits, not exceeding fifty (50) acres in extent of area, for use by the public for a park, and for park purposes, and may provide for the improvement thereof by the planting and preservation of trees and shrubs, by inclosing, ornamenting and protecting the same, and in such other ways as may be necessary to make such lands suitable for the uses of a public park.

Sec. 2. That the city council of every such city may by a majority vote create a park board for such city, to be composed of three members, to be chosen by said council for terms of one, two and three years respectively, all of whom shall be freeholders and residents of such city, and who shall serve without compensation. Such park board shall be authorized and empowered, for and on behalf of and in the name of such city, to acquire by gift, purchase, devise, condemnation or lease the land to be held and used for park purposes, and shall provide for the improvement thereof as specified in section one of this act. Said park board shall have general supervision, management and control of such park and may appoint a suitable person to care for and take charge of the same, and may prescribe his duties and fix his compensation therefor.

Sec. 3. That for the purpose of carrying out the provisions of this act the city council of every such city may appropriate annually out of any of the revenues of the city received from taxes, saloon or other licenses and fines, a sum of money not exceeding ten per cent of such revenues, the money so received to be disbursed for the purposes herein mentioned, in such manner and subject to such rules and regulations as said city council or said park board shall direct.

Sec. 4. All acts and parts of acts inconsistent with this act are hereby repealed.

Sec. 5. This act shall not include or apply to cities now or hereafter governed under a charter adopted under and pursuant to section thirty-six (36), article four (4) of the constitution of this state, as amended, and chapter three hundred and fifty-one (351) of the General Laws of 1899 and the several acts amendatory thereof.

Sec. 6. This act shall take effect and be in force from and after its passage.

Approved April 19, 1905.

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We took advantage of this law. The Improvement Club presented a petition to the city council to appoint a park board to act under this law and subject to the control of the council. They also recommended the names of three citizens for the positions to serve respectively one, two and three years. The selection was a wise one, and the work promptly began, and it was surprising to note the interest aroused. Every one began to talk of "our park," and to enjoy the walks around and through it. The native oaks were left and these supplemented by ornamental trees, shrubs and herbaceous plants. Some beds of foliage plants brightened up the grounds. By the end of the planting season the park was quite attractive. A fountain in the center with gold fish in the basin proved very attractive to the children; with its green grass and many seats, it was a very restful looking spot. What pleased the Improvement Club most was hearing the children talk about "our park."

To augment the funds of the Improvement Club it decided to give an "old time fair," which proved a great success. To show that the effort among the children was not wasted, mention must be made of their doings independent of the mother organization. There are now two junior improvement clubs. One of them followed the example of the older club and held an "old time fair," and their program was a copy of the original in miniature. This was quite a success, and the little girls were so happy to be able to turn over $10.00 to the older society. On asking them how they would like to see the money expended, they thought a swing seat would be the "nicest" thing to have in the park. So it was purchased, and then the park board had their first problem, for all the children under a certain age wanted to be in that swing, and there was danger of the grass being wholly killed in that part of the park.

Then was born a children's playground. The use of some vacant lots across the street was secured, and the park board apparently had no difficulty in finding means for putting up additional swings, turning poles, etc. This place belongs entirely to the children—in a prominent position with elbow room for all, and there is no necessity for the restraining motto, "Keep off the grass." In the spring we expect to plant some quick growing trees to the north to screen the back doors of some stores and to make it as attractive as possible. When the children wish to rest from play, there are plenty of seats and shade in the park close by, and they appear to appreciate all that has been done for them.

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The Second Junior Club gave a play in the city hall one evening. Both clubs were under the direct supervision of the mothers, so you see through the children the interest of the parents is gained and held. The children are being taught to take an interest in civic affairs and will make intelligent citizens who can be relied upon to further all efforts made for the well being of any place wherein they may be living.

There seems to be a growing disposition on the part of the citizens to keep the home grounds in good shape, making them as attratcive as possible. Cement sidewalks are replacing wooden ones, the back yards are receiving attention, the weeds are being rapidly eliminated and flowers brighten almost every yard. Our Board of Health keeps a watchful surveillance over all doubtful places and everything else that is a menace to public health.

Remember that your newspapers are your best friends, and don't expect that everything must be free that they do for you. A little money expended with them will open their hearts and papers to you. Don't let your treasury get so low that you have no funds to meet sudden emergencies, where a little ready money will prove very useful.

As an organization, we feel that much has been accomplished; as a club we have served as a nucleus for starting each enterprise, outlining the work and interesting the public.

Twenty-five Years in Raspberry Culture in Minnesota.

W. J. HOPKINS, BRIARFIELD, BLOOMINGTON.

The general practice in regard to the planting, cultivation, harvesting and marketing of raspberries has changed very little during the last twenty-five years. The most marked advance is in the numbers engaged in the production of the fruit and in the development of supply and demand.

Not quite twenty-five years ago—it was the season of 1885—there was a half acre of Cuthberts and Greggs in the gardens at Briarfield. The plants for this plantation were obtained from Mr. E. P. Roe, at Cornwall-on-the-Hudson, in the autumn of 1883. The berries were marketed three times a week in forty-eight pint cases and for a period of four or five weeks were the only raspberries appearing on the old First Street Market. The price ran from twelve-and-a-half to seventeen-and-a-half cents per pint—$6.00 to $8.40 per case.

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During the season of 1905, as many as 1,800 twenty-four-pint cases were unloaded and sold in one stall at Central Market, in one morning; at the same time every available spot in the market was jammed with red berries of other varieties, and many more were offered from Commission Row. That summer buyers sometimes bought as low as 100 cases for $100.00. Since that time (although arrivals at the market have been heavy and growers very successful in harvesting full crops), the general market has broadened, and prices have been good.

Winter covering is now, as then, the greatest bugbear of the hard working grower. It is true, as an old experienced raspberry grower said to me only a week ago, "If you don't cover, you'll have dead ones in the spring." I know of no better way than Prof. Green's system—bend down and cover with earth. It is slow and laborious but will surely protect. Sometimes at Briarfield we use hay from the marshes with good effect. It is especially useful in covering plantations of blacks that have been "tipped" or "layered"—the branches being drawn to the earth for that purpose.

For the specialist who is earnest and clever, the outlook is good. It is the mind behind the plow that makes or fails to make a crop. The wonderful success of Mr. L. B. Coe, of Indiana, in the corn industry, was not on account of the soil nor the climate nor the variety; it was Mr. Coe himself. I believe there is no soil in Hennepin County but that, with proper attention, would raise fine berries; yet I believe. too, that the best is none too good.

The President: What varieties do you recommend, Mr. Hopkins?

Mr. Hopkins: The Cuthbert and the Gregg.

The President: Do you think the Cuthbert is the best variety to plant for all purposes?

Mr. Hopkins: No, sir, the Miller is better.

The President: Mr. Hopkins' reference to E. P. Roe brought him back to mind. He was a tall, dark, swarthy man, but a very pleasant gentleman and a great lover of horticulture. I used to buy raspberry plants of him on Cornwall-on-the-Hudson. He is the man who wrote "Opening of a Chestnut Burr," and "In Love with His Wife."

Peter Larson: I would like to ask Mr. Hopkins whether he covers the canes entirely, or whether he merely bends them over so a part of the cane would still show.

Mr. Hopkins: I do not think this matter of covering is understood by many people. The way to cover is to cover all that part you wish to bear fruit next season. It is a great advantage to cover in that way, because you can see just how the cane lies when you come to uncover. It is unnecessary to cover the balance of the canes.

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The President: You spoke of covering with swale hay. How do you like that?

Mr. Hopkins: We raise blackcap raspberries. We propagate from the tips, and they spread so that it is difficult to cover them without injuring the plants. The highest part of the bent bush is not higher than twenty inches from the ground, and we cover them in that way; if the canes were upright we could not cover with hay.

Prof. N. E. Hansen (S. D.): I would like to express the believe that raspberry culture is at a turning point. We must have varieties that will not need to be covered, and until that time the amateur will be a little discouraged in raspberry culture.

Mr. J. W. Murray: The gentleman spoke of tipping. One of my neighbors tried the experiment of tipping and letting another part of the raspberry patch stand. Those that were tipped killed out, but those that were left standing were not killed. Does any one recommend tipping? Does it not suggest itself to you that if the long canes extend beyond they will have to be cut off in the spring? Do you recommend letting them stand and cutting them off in the spring? Which is best?

Mr. E. F. Pabody: For twenty years I have grown raspberries for my own use and never covered them and never had them seriously injured. I cut out all of the old wood in the fall and burn it. I cut back the canes almost one-third, sometimes one-half. I raise an abundance of raspberries for my own use and never cover a single vine.

The President: Where are you located?

Mr. Pabody: At Lake Minnetonka.

The President: Do you protect from the winds?

Mr. Pabody: No, sir, they are much exposed to the north wind; they are on a northeast slope.

The President: What varieties do you grow?

Mr. Pabody: The King and the Cuthbert.

Mr. T. T. Bacheller: I am vice-president of my district, which runs up to Taylors Falls. I have found quite a number who used this expression in their reports: "Raspberries do well when covered."

Mr. J. M. Underwood: The way I would cover raspberries would not be to use a plow. I think it is too severe treatment of the roots. I have grown them extensively and covered them extensively, and I have tried machines where they use four horses to cover them. I saw them covering at Long Lake and have covered them myself as fast as a four horse team could walk. But I believe the treatment is too severe, especially where a person is growing raspberries for himself. I believe the spade or the shovel is enough, simply bend them in the root—and they will bend easily. It is not expensive and not difficult, and it is best to cover raspberries anyway. It is the first time I ever knew Prof. Hansen to have "cold feet." I thought he was one of those optimistic fellows who could overcome any kind of obstacles. If he is short of raspberries, I hope he will come to Minnesota to get some. (Laughter.)

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Prof. Hansen: I am raising ten thousand seedlings of all sorts, and I never cover them. I tried common sorts and dug them up and threw them away. My men did not have Christian fortitude enough to lay down raspberries without saying something, and I quit it. (Laughter.) I have a survivor of this combination of varieties that will stand without any covering at all. That is the point I wish to make. You may talk all you please about a method of covering the canes, and yet if you go among farmers you will find they do not do it, and the only way to solve the problem is to have raspberries that do not need protection, and the only way you can get them is from wild stock.

Mr. S. D. Richardson: I want to ask whether anybody ever tried the Iowa? My raspberries all killed out last winter except the Iowa? They have stood one year, and out of a dozen plants not one was injured. I shall try them further. They are short and stocky, they could not be covered very well and make a success of it. The only way they could be covered would be to dig them up and lay them down. (Laughter.)

Mr. J. B. Keller: I would like to inquire in regard to the King raspberry, as to its size, productiveness and hardiness.

Mr. R. A. Wright: I have had experience with the King, and it stood six years without being covered. After six years it killed much easier, but the young beds were not hurt. I think it is as good a berry as we have on the market. It is considered a very good market berry. The Miller is perhaps a little better than the King, but I think for all sorts of soil and conditions the King has the preference over everything else I know of. You cannot test a berry in two or three years. They will grow for three or four years and come into bearing, and then they may not stand the climate well.

Mr. Seth Kenney: Just one word about Prof. Hansen's raspberries. He sent me some for experiment, but I have not had the opportunity of testing them through a hard winter, but I was surprised to have the bushes bend to the ground with fruit the first year. I have never had anything like it in a long experience.

Mr. Leroy Ritchie: Last year I put out 2,500 King raspberries, and I did not get anything extra in the way of a stand, but this past season I picked six hundred quarts from those 2,500 bushes. I cannot tell what they will do in four or five years from now, but I am well satisfied with them at this time.

The President: Did you cover?

Mr. Ritchie: No, sir.

Mr. Clarence Wedge: I believe it would be interesting to find out what share of those present who cultivate raspberries cover and how many do not.

The President: In response to Mr. Wedge's suggestion, without a formal motion, I would like to ask of those who cultivate raspberries how many cover in winter and think it is a desirable thing to do.

Thirty-five hands were raised in the affirmative.

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The President: How many cultivate raspberries and do not cover in winter?

Thirty-six hands were raised.

Mr. A. J. Philips (Wis.): I want to explain my position, because I voted on both sides. (Laughter.) Prof. Hansen sent me twelve of those berries Mr. Kenney spoke of, and they grew very nicely and made very fine plants. When the time came in the fall to protect the fruit my wife said, "Now you cover those berries, or they will die sure, and they are too nice berries to lose." I covered nine and left the others, and she regrets that I did not protect those. That's the reason I voted both ways.

Prof. Hansen: If I had known you were going to cover them, I would not have sent you any. (Laughter.)

The Farmer's Orchard—How to Plant and Care for It.

REV. JOHN B. KATZNER, COLLEGEVILLE.

I have frequently occasion to see farmers' orchards. They vary in size from only a few trees to several hundred. The location is generally near the house on a piece of land that can be spared for such a purpose, or if there be only a few trees they are planted in the vegetable garden. In many instances the trees lean toward the northeast, look sickly, have dead and broken branches, show the effect of blight and have the bark on the south side of the stem and crotches sunscalded. Insects have done much injury. The fruit raised is poor and small, and the orchard on the whole unsatisfactory. In a few years it is gone, and the farmer discouraged. Many intelligent farmers, however, know very well that they ought to tend better to their trees yet cannot spare the time or do not know exactly what to do with them, while others again seem to be entirely indifferent as to the growth and health of the orchard.

To improve these conditions it is my object to show how the farmer can raise a healthy orchard, bearing lots of good fruit, with scarcely any more labor and care than he now bestows on his trees. This article may well be subdivided under two heads—precaution and prevention.

Under the first head, precaution, we will consider selection of stock, fall delivery, location of the orchard and planting; under the second head, prevention, we will have opportunity to learn how to prevent injury to our trees from various causes.

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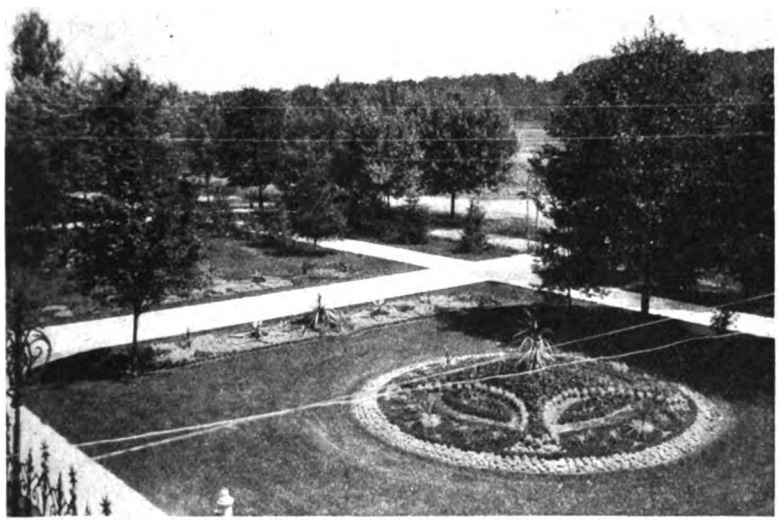
Precaution.—Selection of Stock. In the selection of stock the first essential is: do not get humbugged, for if you do you will be discouraged the first year by an expensive experience. I mean to say—as it has been said frequently by others and cannot be said too often—do not buy nursery stock from eastern or southern states. Such stock is not adapted to our climate and will winter-kill. Buy your stock from a reputable nursery in our own state. We have no need to import stock from Illinois, Indiana or New York. Minne-



The lawn at St. John's University, Collegeville.

sota nurseries grow the best trees and varieties that will succeed on your place. Do not buy from outside agents with glib tongues and fine colored fruit plates. You will get left! Do not buy any varieties of which you know nothing or which have not been thoroughly tried in Minnesota. Do not buy high priced stock. No apple tree is worth a dollar or over. You can buy the best Minnesota grown trees at from $3.50 to $5 a dozen. I am always grieved when I hear that this or that farmer has paid $10. or $12. for a dozen apple trees. He has been humbugged to the tune of $6. or $7., which goes into the pocket of the agent, as I have been confidentially informed. For these and other reasons I would advise you to buy your nursery stock directly from a home nursery. You do not have to pay the agent's profits, you get better stock and well adapted, at reasonable prices, and are sure to receive fair treatment. I know you agree with me that a dol-

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lar saved is indeed a dollar made. Put it into practice. Confine your list of varieties only to those recommended by the Minnesota State Horticultural Society, as Duchess, Hibernal, Okabena, Patten's Greening, Wealthy, Virginia, Whitney and a few others. All of these do very well at St. John's University, Collegeville, Minn. As for plums and other fruits, take the same precaution in the selection of varieties. You can get a complete fruit list for Minnesota planting for the asking from Mr. A. W. Latham, Secy., 207 Kasota Block, Minneapolis, Minn. It would be a very good help for you to join the Minn. State Hort. Society. In fact, most of what I know about horticulture I have learned from reading the annual reports of this society, and it has saved me many a dollar.

Fall Delivery. I consider it very important that you buy and order all fruit trees to be delivered in the fall. There is more time all around for the nurseryman as well as for the farmer at that time of the year, and you can take care of the stock, just as well if not better than the nurseryman can, by heeling in your stock over winter. For this work select a place where water does not accumulate. When you get notice that the stock has been shipped, dig a hole the length of the trees, a few inches deep, for the tops of the trees, slanting down to the north to about two feet deep for the roots, and wide enough so that all the trees can be placed in the trench without crowding them too much. For a hundred trees a hole six feet wide is about right. When the trees arrive, unpack at once, prune the roots slanting—so that the tree will stand on the cut part of the root when planted, to insure a downward growth of the new roots. Cut off all broken parts of the roots. Now place the trees in the hole—which ought to be a little deeper just where the roots come, so that they will not be injured. When you have put in about five or six trees, throw a little dirt on between the roots. Above the first tier of trees you can place one or two more. When all the trees are in the hole, shovel some more ground on the roots till all are well covered. Now place a board on the ground over the roots and similar boards across the stems and branches, so that the trees are entirely covered. A few short stakes under the boards will keep too great pressure off from the trees. Fill up the hole with dirt, make a mound a little higher than the surface, to let the water flow off, and then put on a mulch about a foot deep when the ground freezes up. The trees are covered with boards so that they shall not be injured by the shovel when they are taken out in the spring. The stock is now well heeled in and will come out

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of its winter quarters full of sap and vigor, ready to start into active growth at once. It is my experience, running back over the last fifteen years, that trees so handled will not fail to make a growth of from six inches to three feet the first season.

If you compare the growth of these trees with that of spring delivered trees, if you think of the consequent success in the one case and the frequent failures in the other, the great advantage of fall delivery of stock will be evident to you. Another advantage of fall delivery, which we must not lose sight of, is, that we have our trees on hand in spring to plant whenever we are ready.

The Location of the Orchard. Select not too far from the house a high, fertile piece of land of a somewhat retentive nature. Prefer a hillside with clay subsoil, that slopes to the north or northeast and has been cultivated for some years. There ought to be a windbreak on the south and west, and if the force of the northwest winds could be a little checked, it might improve the conditions. But this is an ideal location, and only a few farmers have such a piece of land near the house. In many instances the only land available for an orchard is a poor gravelly hill, an old piece of pasture or a low, wet place full of weeds and grass. Do not select a southern slope with gravel subsoil, nor a low or wet piece of land; any other location may do very well for an orchard site under proper treatment. In the selection of the ground for an orchard get as closely to the ideal location as possible. Keep the cattle out by fencing it in if necessary. Lay out the orchard, marking off the holes sixteen by sixteen feet each way. If the rows from north to south are a little further apart it would be better, as spreading varieties of apples require more room, but do not plant them any closer. Plums may be planted ten by sixteen feet. It is of special importance that you dig the holes in the fall so that the sunlight, rain, frost and snow come in contact with the soil of the holes. This will produce the best conditions for tree growth. Make the holes about twenty inches deep and at least two feet wide, so that the roots can be spread out in their natural position. In taking out the soil from the holes, separate the fertile topsoil from the subsoil, which latter should not be used for planting. It may be that you have not sufficient topsoil on hand for planting—especially will this be the case in grass land or on a poor hillside. In such case haul all the good ground necessary for planting and unload at each hole as much as may be required. Later on during the winter haul strawy manure and distribute it between the holes to serve next spring as a mulch for the newly set trees. Now all this work can and should be

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done in the fall preparatory for spring planting. This preparation is good for the trees and saves much time in the spring, when you need it for other work on the farm.

The Planting of the Orchard. It is of great importance that you set out your trees as early as possible. When the mild, warm days of March have melted the snow, go out to the place where the trees are heeled in and remove the mulch. Some days later, shovel off the ground down to the boards. Now wait a week to give the trees a chance to thaw out, and then if the weather is favorable do your planting. It will be necessary to shovel out of the holes for planting the loose ground washed in since fall. If the ground below is frozen yet, no harm will come to your trees from that. Just throw in a little earth first and then set the tree on it. Plant the trees from four to six inches deeper than they stood in the nursery and spread out the roots the way they have grown. Fill up the hole and work the ground well down between the roots. Incline the trees toward the direction of the prevailing winds of summer and try to keep them in that position, even if you have to stake them. When the higher roots are covered about four inches, apply your feet and trample the ground firmly. Throw in some more ground to within one inch of the surface and keep that ground loose. Use only rich, mellow surface ground for planting. The subsoil from the holes you may scatter, or if the rain water would not be likely to stay around the trees use that ground to bank up on the lower side about three feet out from the trees.

After the trees are all planted, prune back the branches to about four or six inches and cut off just where the branch has a large bud on the lower side. Always be careful that you have one or two good branches on the south side. If the tree has more than four branches you may cut the smaller ones away entirely, and the leader, too, may be cut back a little. This will give you a more spreading tree, which is of advantage. Aim to have the lower branches no higher than two and one-half feet from the ground. Now mulch the trees, by putting on straw-manure one-half foot or more thick, at least three feet out from the trees all around, and spread it evenly, so that the water will stay and benefit them. Finish up by putting on the tree protectors, which you can get with the trees from your nurseryman at a small expense. All this work can be easily done before seeding time.

I have not said anything about using water for planting. The reason is that water is not necessary when you plant so early that the ground is full of moisture. In fact, I have applied no water to the

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roots in planting trees for the last twelve years without meeting with any serious consequences. When I am ready to plant I take off the boards from the trees, pull out only a few at a time, wrap them in a well-soaked piece of burlap and plant at once. Of course, water is necessary for planting fruit trees successfully if the ground is dry.

An avenue of Lombardy poplars at St. John's University.

I have yet to mention that if the site of the orchard is in grass the sod should be removed and a circular garden bed six feet in diameter prepared and thoroughly mulched. The earliest date I ever set out trees was on the 25th of March, the frost being scarcely sufficiently out of the ground, and I well remember that the ground froze again

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about three inches and some six inches of snow fell later. Yet my trees were saved and grew.

What I have laid down in the foregoing is the method I have followed in planting all my trees, and it has produced very satisfactory results with the least labor. If you take the same precaution in planting your orchard, although it may differ somewhat from the professional way, you will no doubt be rewarded with similar results.

Prevention. The after care of the newly planted orchard consists chiefly in the prevention of injury to the trees. The wise heads in horticulture tell the farmers: "Cultivate the orchard frequently, do not allow any grass to grow, spray the trees several times to prevent injury from insects, wrap the trees to protect the stem, mulch every fall"—and many other things. Now, while all these doctrines are very good and would probably be the best method to follow, the question is, can all these instructions be carried out by the farmers in orcharding? With very few exceptions the farmers hurry their trees carelessly into the ground and let them thereafter take care of themselves, a thing they would not do with their corn if they were to expect a good crop. The farmers have no spare time, they say; the more important farm occupations require all their time and attention. Still something must apparently be done to combat the many causes of injury to the trees, if the orchard shall not turn out a partial or complete failure.

We will now consider the principal causes of injury to orchard trees and the easiest way to render them ineffective by the average farmer.

If we were living in a climate more congenial to fruit trees, some of the principal causes of injury to them would be absent, but as it is our trees have to endure the extreme cold of winter and the excessive heat of summer. It takes an iron tree constitution to stand these extremes without injury. It is only too true that nearly all our present varieties of apple trees are not always, under all climatic conditions, sufficiently hardy. Hence it is that the trees suffer injury first from root-killing.

Root-killing. It is a fact and we all know it, that in some extremely cold winters the roots of apple trees are killed by frost. Experience has taught us that this will happen much easier when there is no snow or not sufficient snow on the ground. And again we know that this root-killing does not happen, at least not so frequently, when the bare ground is covered with any good vegetable covering. As the snowfall cannot always be relied upon, the natural and at the same time

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the easiest preventative of root-killing is a good vegetable covering either in the form of grass crop or mulch. Should the farmers use my method of planting, the trees would require no further attention except perhaps to go through the orchard in the fall and assure themselves that the mulch which was put on at the time of planting is in good condition. Hence I say, keep the mulch on, it will be a sufficient protection against the danger of root-killing.

Droughts. As in winter, so too in summer, the life of young trees may be exposed to danger by a protracted drought. The states in close proximity to the ocean do not suffer so much from this cause, as the atmosphere is more humid, but Minnesota being an inland state, far away from the moderating influence of great bodies of water, has a continental climate, that is, a hot and dry temperature in summer. It belongs to the semi-arid states. In some years rainfall is deficient in July and August, drought becomes severe and the soil loses all moisture several feet down. In common with all other vegetation the young apple trees suffer from lack of moisture and may die. But if the farmer has selected a site for his orchard with retentive soil and keeps his trees well mulched, no harm will come to them. The mulch will protect the trees and keep the ground moist and cool. The trees remain vigorous, keep up a healthy growth and pass through the dry spell uninjured. So keep the mulch on continually, till the trees commence to bear. Then you need not renew the mulch any more but may let it decay and give the grass a chance. Your trees are now well established, the roots go down deep into the subsoil and supply the trees with sufficient moisture at all times even during a pretty severe drought. A mulch is therefore a very good protection for trees; it prevents root-killing, freezing dry in winter, and in summer keeps the ground cool and moist and preserves the moisture for the time when the trees need it most.

Droughts. As in winter, so too in summer the life of young trees the south side. It is the result of the repeated thawing and freezing in early spring. During the warm days of March the sap starts to rise by the action of the sun and freezes again during the cold nights. By this continued thawing and freezing process the bark is unnaturally expanded and contracted on the south side, especially of the larger trees and limbs which are directly exposed to the rays of the sun, and it bursts, doing irreparable injury to the trees. Experience again has taught us the lesson, that whatever shades the stem and larger branches of the trees will also protect them from sunscald. For this reason we should plant our trees well inclined toward the south, so that the rays

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of the sun will strike the stem more obliquely, and so that the force of the prevailing summer winds will not incline them to the northeast and expose the stem and branches at right angles to this damaging action of the sun—and we should also see to it that the branches growing on the south side shade and protect the stem. For this reason too we put on the tree a protector, generally a wood veneer, and leave it on all the time. Then again, we shade the lower branches by placing and tieing a little hay between the crotches, letting it come down to the protector on the south side. This protection of stem, branches and crotches will shield from sunscald and will last for several years.

Blight may seriously menace the life of apple trees and in some seasons may cause their death. The worst of it is that we do not know much about it, nor have we any sure remedy to conquer this disease. We know, however, that it is liable to appear in June on warm, sunny days with repeated showers, when the trees grow vigorously. The new, succulent growth of the branches is first attacked, the leaves, without apparent reason, wither, and in a few hours not only one branch but all may become brown as if singed by fire. And what can we do against it? Very little. We should only plant those varieties recommended by the Minnesota State Horticultural Society, as these varieties are known to be not at all or at least only very little subject to blight. If blight should appear, cut out the affected branches a little below the diseased part and burn them at once, that the blight shall not spread, for it is contagious. High cultivation of the trees is more likely to induce blight than neglect. But as the farmers do not generally cultivate their orchards, I need not say much about it but close with the remark that, where trees are not cultivated and stand in grass their growth is not forced but very normal and natural, and this seems to be the best protection against blight. As a further result I may state here that trees not cultivated stop active growth in due time, ripen their wood well and are not so liable to freeze back as those which are under high cultivation.

Other Dangers. But the danger of injury from climatic conditions is not the only one that threatens our trees; there are others just as harmful which we have to guard against. Some of them are the rodents, as rabbits, mice and borers. They may ruin our trees, if we do not stop their depredation. If our trees, however, are well protected on the stem and lower branches, these enemies become harmless. Hence we see again the wisdom of the precaution at the very start of our orchard, as this is the best preventive of injury to our trees from rodents. Yet in some cases it may become necessary to use snares or a shotgun to spoil the appetite of rabbits for apple trees.

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Insects too—and their name is legion—may do injury to our trees. I will only mention a few. The tent caterpillar will hatch in spring, as soon as the leaves come out, and eat the tender foliage as fast as it grows. If you do not check their work, they will keep the trees quite defoliated. But if you love your trees, you will go through the orchard a few times in spring, and wherever you see a weblike tent you will look for the caterpillars and destroy them. The aphis is another insect. It sucks the sap out on the lower side of the leaves at the end of the branches, and the leaves curl. They are of the size of lice, green or black. Strong tobacco water will do away with them. For all the rest of insects doing damage to leaves and fruit, spraying is resorted to; but spraying the trees is an operation which the farmers generally neglect. Yet it would not be so very much extra work to give their trees a good spraying at the time, for instance, when they spray the potatoes. Paris green and bordeaux mixture are now recommended for spraying potatoes, and this spray could be used with the same advantage on the trees.

When in grass the orchard should be mowed every year. It would be preferable to leave the cut grass spread out in the orchard as a mulch and a fertilizer. If this is done, no other manure would ever be necessary in the orchard. But if the grass is to be used as hay, it will be advantageous to give the orchard a top dressing of manure or wood ashes every second year as soon as the trees are of bearing age, in order to keep up vigor and health in the orchard.

This is the method I have used right along to prevent injury to my trees, and where I have done my work well it has been a success. The trees look thrifty and healthy, as every one going through the orchard may see for himself.

For the reasons stated, *precaution* and *prevention* are the two main principles in horticulture which the farmer may safely follow. They lead to successful results in planting the orchard, they maintain it in a healthy condition and reward bountifully the work and care which the farmer has bestowed upon his trees. And again from these remarks the farmer will readily understand that very little extra work and care is required when the trees are once well planted and kept continually protected.

I have gone thus into details, mentioning my own work and experience in the orchard, not for the benefit of the professional grower of apples but for that of the less experienced farmer, that he too with his family may gather larger returns from the orchard and all enjoy to their hearts' content these bountiful gifts of God and nature.

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SECRETARY'S CORNER

MEMBERSHIP FOR 1908.—The annual membership roll is steadily increasing, and at this date, April 24th, stands at 2466. Two hundred life members added to this brings the membership very near to 2700, and the end is not yet. How many names did you contribute towards this?

RED RIVER VALLEY HORTICULTURAL SOCIETY.—Prof. Wm. Robertson, of Crookston, Minn., is secretary of this local society, which shows up this year with twenty-five members. The annual meeting was held lately in Crookston. Mr. J. F. Hetler, of that city, is president of this auxiliary.

FARMERS' BULLETINS ON FRUIT DISEASES.—The Bureau of Plant Industry of the U. S. Department of Agriculture are asking for a list of members of this society for the purpose of sending them farmers' bulletins on fruit diseases, etc. Any of our members receiving this matter who are not interested in the subject can readily stop its coming by addressing M. B. Waite, Department of Agriculture, Washington, D. C.

PURCHASING SPRAYING MATERIAL.—We are informed that reliable parties are making the various spraying preparations, and that they can be purchased in any quantity desired at the drug stores of the state. If upon application it is found that they are not kept, direct the druggist to apply to the drug jobbers in either of the two cities, and the material will be secured without difficulty. This notice is put in for the benefit of those who do not wish to go to the trouble of preparing the mixture, and for only a small amount it is of course considerable trouble. Spraying will pay well even for a small orchard, and the lack of acquaintance with the manufacture of spraying material need not and should not stand in the way of this necessary work.

BULLETIN ON SPRAYING IN MINNESOTA, FOR FREE DISTRIBUTION.—The Entomological Division of the Experiment Station has just issued press bulletin No. 31, containing suggestions to those who are preparing to spray this spring and summer. Not only are there illustrated examples, showing the benefits of spraying, but a list of spraying machinery firms, and recipes for making Bordeaux mixture, kerosine emulsion, resin soap, and recipes for combining fungicides and insecticides. Under the heads of Apple, Plum, Raspberry, Currant, Strawberry, Melons, Cucumbers, Tomatoes, Potatoes, Cabbages, etc., the Entomologist lists remedies and means of prevention for the various insects and plant diseases which attack the plants or trees mentioned. Insects and diseases at tacking the rose are also discussed briefly. This press bulletin can be obtained by addressing the State Experiment Station, St. Anthony Park, Minn.

The secretary notes that in this bulletin Prof. Washburn suggests using three pounds of Paris green with 150 gallons of Bordeaux mixture, which is a considerably larger proportion of Paris green than many of our members have used,—in some cases more than three times as much. Without doubt, in recommending this, however, Prof. Washburn is following along the lines of sufficient experiment to satisfy him that this proportion of Paris green is a safe one for general use with Bordeaux mixture.

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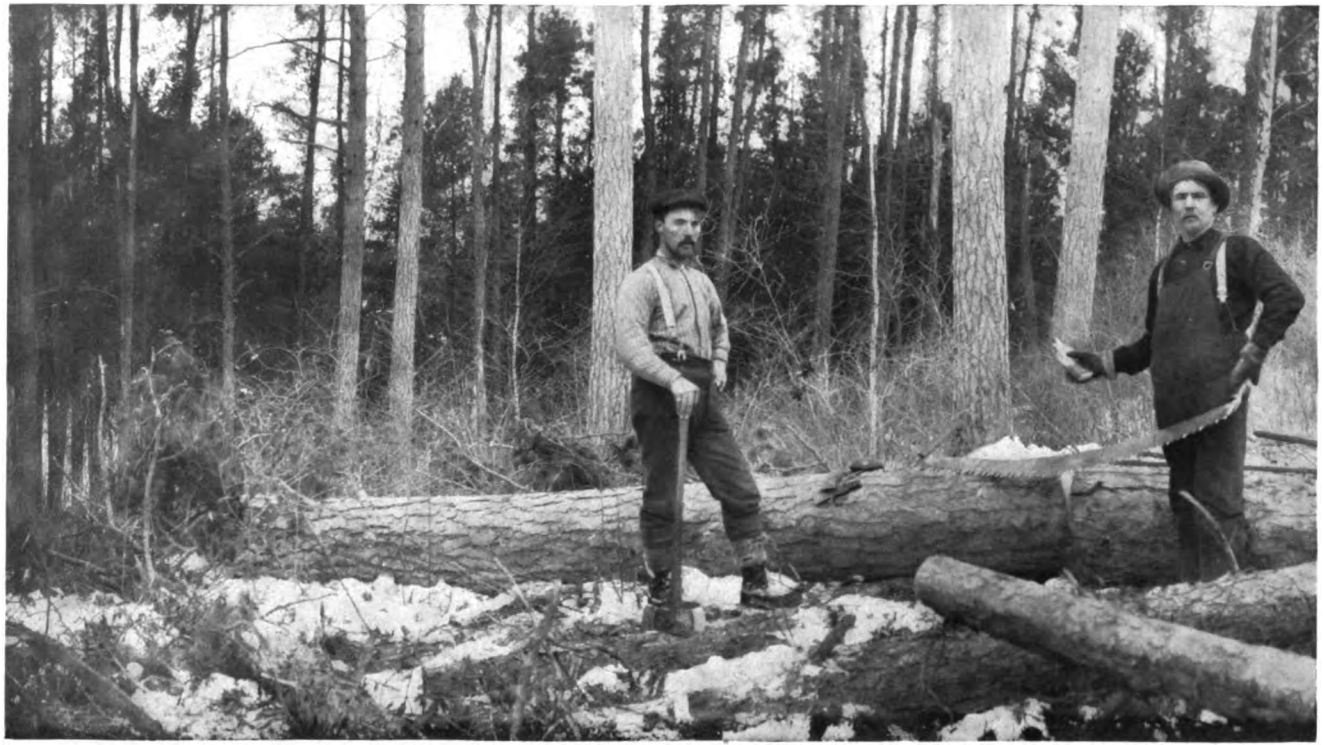

A Typical Scene in the Pine Forests of Northern Minnesota

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THE MINNESOTA HORTICULTURIST

Vol. 36 JUNE, 1908. No. 6

The Attitude of the Lumbermen toward Forestry.

J. E. RHODES, MINNEAPOLIS, SEC'Y NO. PINE MFG'S ASS'N.

Previous to 1892 it seems to have occurred to but a few persons that there was any serious possibility of the exhaustion of the mighty forests with which the greater part of this land was clothed. The pioneers faced the forest as an enemy to be gotten rid of in order that the country might be "opened up" for cultivation. It has been within ten years that the possibility of a timber famine has been considered by men interested in the future welfare of this nation. It is less than five years since lumbermen have generally come to realize that the end of the lumber industry, as at present conducted, is inevitable.

The original forester was a good deal of a crank. He filled his place in the scheme of things, however, because cranks are usually in the vanguard of any public sentiment favoring great economic improvements. The original forester was not familiar with the possibilities of his profession. There arose an antagonism between himself and the lumbermen because he believed that any man who cut a tree was an enemy to society. He was impractical because he offered no satisfactory solution of the problem of how the forest can be used and saved at the same time. There has been a great advance in the science of forestry during the past eight years, and the narrow ideas of the original forester would not be tolerated by the professional forester of today. While forestry has been practiced in the older countries for a great many years, the conditions obtaining in the United States make it a vastly more difficult problem here.

The original forester has given way to the forester who is also a lumberman, who believes that the forests should be preserved for their use, and who is studying the requirements of the lumber business quite as much as he is studying the merely physical characteristics of trees. The forester of today realizes that the success of his calling depends almost entirely upon the attitude which the lumbermen take

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toward it. He realizes that to secure that degree of co-operation which he needs from the lumbermen he must show them how they can perpetuate their own business, which means the saving of the forests.

The lumbermen are rapidly coming to recognize that it is to their interest to co-operate actively and harmoniously with the forester in helping him to work out this problem along practical lines. It is fair to say that the changed attitude of the forester toward the lumbermen has been very largely brought about by the wisdom and diplomacy of Mr. Gifford Pinchot, who has been chief of the United States Forest Service since 1898. The good will of the lumbermen has been cultivated, and consistent efforts have been made to impress upon them the benefits which they may expect from the practical application of the principles of forestry to the business of cutting trees. As a natural result the lumbermen of the country are today interesting themselves in forestry and are studying its bearing on their affairs as they never have done before. They have not yet concluded that forestry, admittedly admirable in the abstract, can be applied to lumbering, on the present scale, with successful results. They are coming to believe that the successful application of forestry to the lumber business of the whole country must result in a very radical change in the present methods of the business. They would like to see something worked out by which the timber supply can be maintained, and they are beginning to regard forestry as something tangible and helpful to that end. This is no small achievement to the cause of forestry. Many lumbermen have already availed themselves of the assistance of the Forest Service in the adoption of practical forest management in the operation of their properties. The results are being watched by thousands of other lumbermen and timber owners, who have heretofore regarded it as something theoretical and without practical value.

The chief influence that has brought the lumbermen to realize that their business is approaching a crisis, necessitating material changes in present methods, is the remarkable development of the lumber business during the past eight years and the consequent drain upon the timber resources. This country emerged from a long spell of financial depression in 1898, when there set in an era of unprecedented prosperity, marking the greatest growth which the nation ever had in a like period. With the increased wealth of the people the demand for lumber increased out of all proportion to the population. From 1880 to 1900 the increase in the population was fifty-two percent, but in lumber cut ninety-four percent. The lumber business ranks fourth among the great manufacturing industries of the nation and repre-

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sents an invested capital of about $611,000,000, and an annual outlay of over $100,000,000 in wages. It affords a means of livelihood to considerably over a million persons. The annual value of the product is nearly $575,000,000. There are more than 25,000 saw mills in the United States. The development of the business in this country is without parallel.

Great as has been the demand for lumber for the construction of homes and buildings in the towns and cities from one end of the country to the other, the demand for lumber for industrial purposes has been even greater. This includes the lumber consumed by the railroad companines and manufacturing establishments of every kind. It is estimated that the making of boxes consumes fully one-quarter of all the lumber produced. There have been times during the past eight years when the lumbermen have been unable to supply the demand, and buyers have bid against each other for stock. The price of lumber has consequently risen, and with it the value of standing timber. The laws of supply and demand have been entirely responsible for these advances, notwithstanding statements which have been published to the contrary. This fact will be more generally understood some day than it is now.

While the demand for lumber has been great, the decreasing supply of standing timber, especially in the northern states, has been a large factor in the advancing values of forest products. Woods which were originally considered as of no merchantable value are now being cut because the more valuable species are exhausted. It was not many years ago that the yellow pine of the southern states was considered of little value for lumber, except for the very ordinary grades. Today it constitutes about one-third of all of the lumber produced, including hardwoods, amounting last year to more than thirteen billions of feet. Some idea of the decrease in the production of northern pine may be obtained when I say that during the past sawing season the total output of pine lumber in Michigan, Wisconsin, Minnesota and Iowa was less than three billions of feet, compared with the maximum product of nine billions in 1890. About 265 mills which were at one time or another turning white pine logs into lumber are no longer operated because there are no more logs to saw. The mills in the city of Minneapolis, which in 1898 manufactured about 600,000,000 feet, sawed 214,000,000 feet this season. It is believed that the maximum production of coniferous woods east of the Rocky Mountains has been reached. In 1890 northern pine stumpage, the estimates of which included only the best timber, was sold at from 75 cents to $4.00

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per thousand feet in this state. Today it sells from $5 to $13.50, and estimates include everything in the shape of a tree. In order to increase the production of lumber there has been a marked improvement in mill machinery and logging tools, and a constant study is made of methods that will save waste. In seeking to utilize waste products the lumbermen have come in contact with the professional forester, who is studying the same question.

It is therefore easy to see why the lumbermen are rapidly coming to realize that something must be done if their business is to be prolonged. They know that while lumber is absolutely indispensable it cannot continue to be manufactured and consumed at the present rate indefinitely. They are willing to admit that conservative methods must be applied to lumbering. They are looking to the practical forester. But the lumbermen also know that even if the most scientific methods recommended by the foresters should be applied to all of the lumbering operations in this country it would not permit of the production of more than one-half of the lumber now manufactured, and probably much less than that. They believe that because of this compulsory reduction in the lumber cut prices will advance to that point where substitutes, such as cement, brick and steel, will become the more economical, considering their greater permanency. They believe that in the long run the general use of substitutes will be of decided advantage to the country, for at present ninety per cent of the construction in the United States is not of a fireproof nature. Our buildings are erected to burn down, and the loss by fire today nearly equals that of all other civilized countries put together. The lumbermen have no fear but that the demand for their product, in spite of the increasing use of substitutes, will generally keep pace with the production.

The lumbermen do not believe that they should be criticized for what is called "the wanton destruction of the forests". They engaged in the business of sawing lumber to supply the demand which existed for it, and their business as conducted has been legitimate. The public must share with them the full responsibility for the disappearance of the forests. Only since lumber has risen to present values could scientific principles of forestry be applied to logging operations with profit. The lumbermen further believe that the remarkable development of the great farming region of the Mississippi Valley, which has meant so much to the nation as a whole, and even to the world at large, could not have been brought about without the sacrifice of the forests of the north, the nearest source of lumber supply; and many persons feel that the results have justified the sacrifice.

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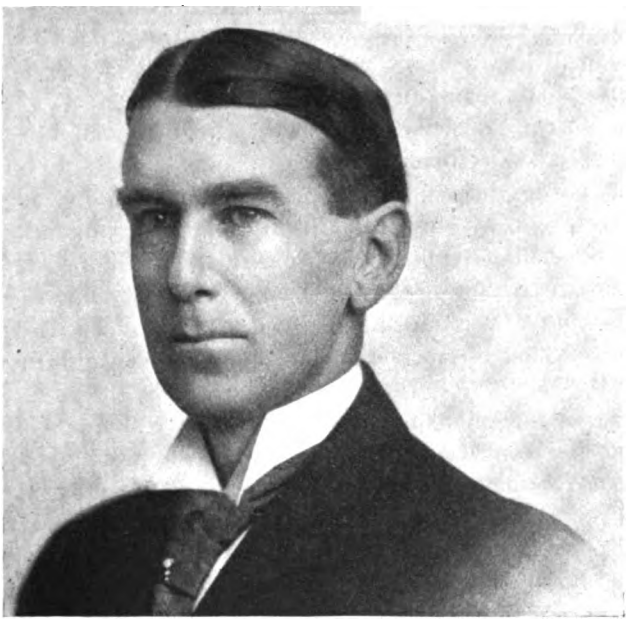
The lumbermen do not believe that, based on present values of timber and cost of taxation, the methods proposed by the foresters for the cutting of timber in the northern pine region can be adopted. It must be admitted that unless such methods can be practiced with profitable results they cannot be undertaken. In the southern states, where the growth of vegetation is much more rapid, and in the case of certain species of northern trees, such as spruce, also on the Pacific Coast, these methods may be successful under present conditions. Those who have adopted scientific principles in the management of their forests are operating largely in southern timber.



Mr. J. E. Rhodes, Minneapolis.

The lumbermen believe that as the public should bear its share of responsibility for the cutting of the forests, it is the duty of the state to foster in every way the work of reforestation. Individuals cannot be expected to undertake this work at a loss to themselves, no matter how much they may be prompted by sentiment. The two great obstacles to individual effort along this line are fire and taxes. In the matter of fire protection Minnesota has co-operated as no other state has. Her efficient laws have been most admirably executed by the state forest fire warden, Gen. C. C. Andrews. The lumbermen of Minnesota are glad, I am sure, to testify to his zeal and the loyal and competent discharge of his duties.

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The lumbermen believe that a material change in the system of taxing timber lands would stimulate a more general adoption of forestry methods. Under the present drastic taxation the owner cannot afford to do otherwise than cut the timber and clean the land as quickly as possible. He cannot afford to protect and cultivate the young growth or wait for a second crop, because the taxes make it prohibitive. Much as their sense of obligation to future generations may dictate, it is too much to expect present owners to undertake this work at great pecuniary loss to themselves. This is especially true in the case of northern pine, a tree of which does not grow to merchantable size in much less than sixty-five to seventy-five years. The state could better afford to collect a low annual tax over a long period of years than to levy a heavy tax for a short period, especially when such a course would maintain an important industry.

The lumbermen also believe that it would be well for the state to induce capital to reforest lands not adaptable for agriculture, but which may be designated by the proper state authority as suitable for forest reserves, by exempting them from taxation until the first crop of trees shall have been cut from them, when the state would collect a certain portion of the net income. The revenue to the state from such a course would in the long run greatly exceed that from the taxes now collected on such lands, besides insuring a future timber supply.

Because of the eminently practical basis on which it is being conducted and the beneficial results following the work which it has already done for the country, the lumbermen believe that the federal Forest Service should be maintained and encouraged in every reasonable way. They are pleased to note that it is rapidly becoming self-sustaining. As indicative of the growing interest which lumbermen have in forestry, I might say that the lumber manufacturers of the country are just now raising a fund of $250,000 with which to establish a chair in the Yale Forest School, of Yale University, to be known as the "Chair of Applied Forestry and Practical Lumbering". The Yale Forest School was selected for this endowment as it is at present the foremost forest school in the country. It is proposed that this course will educate the rising young foresters in the intimate relations between the practical business of making lumber and scientific forest management.

There have been no objections by the lumbermen to the placing of immense areas of timber lands in national forests. They readily appreciate that every acre of timber which is withdrawn from the

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open market and placed under the permanent jurisdiction of the government enhances the value of their individual holdings. And while this may temporarily affect the price of lumber, they realize that it will eventually have the effect of equalizing and regulating prices and prevent wide fluctuations.

The lumbermen have an increasing interest in forestry as they come to recognize the economic necessity for conservative lumbering, and I am perfectly safe in saying that they will be found ready and willing to co-operate with the state and national governments, and with the citizens generally, in every movement for the promotion of forestry upon lines which are sensible, practicable and sound.

The Work of the Forestry Association.

S. M. OWEN, MINNEAPOLIS, PRES.

Fellow Members of the State Forestry Association: I am slated for an address at this time, but what I shall say does not deserve to be so dignified. We have already exceeded the time given us by the horticultural society, and I shall trespass no longer on the courtesy of the society than to say a few words regarding the aims of this association, which differs essentially from that of the State Forestry Board. The last has to do with the larger work of conservation of the remaining forests of the state, to do what it can to reforest certain areas now practically denuded, and to administer the forest reserves of the state; while this association is devoted largely to the promotion of tree planting on farms, a work quite as important as that of the Forestry Board. It is the belief of the members of this association that there are thousands of acres, in the aggregate, on the farms of the state which are better adapted to timber growth than to any other crop, and which will prove more profitable to their owners, in the long run, in producing trees than in growing any other crop.

We believe that this is especially true at this time, when it seems that the kind of timber which is destined to be in great demand a few years hence can be easily and quickly grown on the sort of lands just referred to. In this connection I am reminded of the Norway poplar, samples of the timber of which are on exhibition here. It has been estimated that from fifty to sixty per cent of all the lumber used in this country now is for packing boxes, crates, light barrels, etc. This estimate will not seem so extravagant when it is recalled that the lumber so used is of very short life, is largely destroyed after being used once, which is quite unlike the fate of the lumber which goes into buildings, where it may last a century.

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If you examine the lumber from the Norway poplar it will doubtless occur to you that it is well adapted to making the quickly destroyed cases, etc. just referred to. The growing of this and similar timber of quick growth seems to be essential to the supplying of a demand that in the early future will be urgent, and at the same time supply the place of slower growing and more valuable timber, or at least that which will be more durable. Promoting the growing of such timber, and the harder sorts too, on the farms of the state is a work that should not only be promoted by an association of this kind, but should be assisted by the state with reasonable liberality.

In short, if each farm of the state has a few acres of land not well adapted to crop growing but adapted to tree growing (and such a condition exists on very many farms), and all the acres were covered with trees, the whole would make a forest area which it would take the state a long time to equal in extent and value. I trust I have now said enough to convince you that the forestry association has a mission that entitles it to your respect and ought to entitle it to your support and that of all our fellow citizens. It would give me pleasure to comment upon and commend the papers which have been read here this afternoon, but time forbids. The lumbermen who have favored us with able papers presenting their views of the forestry question were both interesting and instructive, and while some of them reflected mildly on us theoretical foresters, yet it is plain to be seen that forest preservers and forest destroyers are much closer together now than they have been in the past. As forests disappear and lumbermen find their occupation going, they are evidently entertaining a higher respect for those they erstwhile regarded "forest cranks," impracticable, visionary and antagonistic.

I cannot refrain from saying that if lumbermen had in the past taken a little pains to get acquainted with the forest conserving advocates which they were accustomed to despise, had learned what was in the mind of the advocates and how really rational, sensible and practical their views and aspirations were, they would have had more respect for these views and aspirations, and would have co-operated with them as friends and fellow workers and not regarded them as enemies. No true forestry advocate ever objected to an intelligent harvesting of the mature trees of the forests, but they did object to the devastation of forests, and lumbermen have now come to see that it would have been to their own best interest if they had worked to conserve forest growth for future use instead of making re-growing impossible.

Now the views and aspirations which have been working in the mind and heart of the once despised theoretical forester for fifty years

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have at last permeated the souls of lumbermen, and as they now view with dismay the waste places which once teemed with gigantic forests they must regret that they did not sooner comprehend and act upon the spirit of those forest conservers who would have spared the commercial foresters the comparatively forestless condition which now confronts and appalls them.

Seedling Fruits for 1907.

J. M. UNDERWOOD, LAKE CITY, CHAIRMAN.

The work done by your seedling committee the past year has been principally that of personal experience, and does not comprise a very large field among other fruit growers, altho there are some interesting experiences that each of the committee will call your attention to. There are a number of people thruout the state who are sending in samples of fruit, which often prove to be some well known variety which they think is a seedling, and more often it is a variety that is not worth propagating for the reason that we have many varieties that are of better quality and greater promise.

At the Jewell Nursery we found a number of interesting seedlings in bearing. At my table we make a practice of saving seeds from good varieties of apples, such as the Wealthy and Okabena, which we plant out and grow into fruiting. I have samples here of fruit that we raised this year. They are mainly valuable to show the variations that take place by natural hybridization.

Here is a seedling of the Okabena, in which there is apparently a cross of some crab, as the stem and flavor indicate. While not quite as good as the Okabena in quality, it is very much superior to any crab. In size it is smaller than the Okabena, and the color is very beautiful—a yellow ground with a bright blush on one side. It hangs on the tree well. There are two other seedlings of the Okabena that are very promising for their abundance of fruit, hardiness of tree and beauty of coloring. They are not quite as large as the parent but are equal in quality.

In 1902 we saved some seed of the Transcendent and Orange, planted them in a trial orchard, and this year two of the Transcendents bore beautiful red apples, as large as the Longfield and so entirely different in appearance from the Transcendent that the variation was really remarkable. The fruit hung in ropes upon the tree and was so tenacious that the winds could not blow them off.

There was a similar result from one of the Orange seedlings. The color of the bark indicated the Orange blood, but it is a more thrifty and upright grower, and it was heavily loaded with red apples two to two and one-fourth inches in diameter.

We consider these results very encouraging as indicating possibilities of obtaining new varieties from natural cross-fertilization. If we can secure results of this kind by planting seed, how much more valuable and accurate would our experiments be if we could start with hand pollination.

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Methods of Plant Variation.

PROF. C. B. WALDRON, FARGO, N. D.

To obtain a knowledge of the principles of plant variation and improvement sufficient to enable one to foretell with a reasonable degree of certainty what the outcome of a given line of work will be is the problem that has long confronted all plant breeders.

To know what methods to pursue to attain any real improvement, and that in the shortest time, is another aspect of the same problem.

Up to within almost the present time the aim of plant breeders has not been to discover principles, that might aid the work in the future, but has been chiefly directed toward immediate results in the way of new and improved varieties.

Exepriments that have failed to give positive results in the way of improved forms have rarely been recorded, so that the total amount of available literature on the science of plant improvement is not large, and until within very recent times has not been brought together in anything like systematic order. "Plant Breeding," published by Bailey in 1895, was a fairly complete statement of the principles of plant improvement as understood at that time.

In 1905 appeared in English the eagerly anticipated work of Hugo DeVris, of Amsterdam, under the title "Species and Varieties, Their Origin by Mutation." This work not only presents the ideas of plant variation as conceived and observed by the author but is a comprehensive and masterly discussion of the whole range of plant improvement and development.

During the past summer another work by DeVris, under the name "Plant Breeding," discusses some of the more recent phases of that line of work, particularly from the practical side.

In 1906 Prof. Bailey's "Plant Breeding" appeared in a new and enlarged edition. A part of this work is devoted to a review and discussion of the work of DeVris, and in general it is a discussion of the later ideas and conceptions relating to the improvement of plants. For the average reader it doubtless constitutes the most concise and, at the same time, clear and comprehensive statement of the plant breeding situation to be found within the covers of any one book. It is difficult to summarize in a brief paper the new conceptions that have come into the minds of the men who have looked deeply into this subject.

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Without attempting at this time to present the scientific elements that underlie these conceptions we will consider as briefly and clearly as possible what the more important of these are and how they affect the practice of plant breeding.

It is now generally understood that variation, the process upon which all plant improvement rests, is of two distinct general kinds, i. e., "variation proper" and "mutation."

Prof. C. B. Waldron, Horticulturist, North Dakota Agricultural College and Experiment Station, Fargo, N. D.

Under the first head, "variation proper," are the minor fluctuations arising from differences of environment, from retrogression, from the reappearance of latent characters, etc. Differences thus arising are fluctuating and unstable and are transmissable to the offspring only in partial or slight degree. The different types of this form will be enumerated later.

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In the second category are the "mutations." These are sudden and marked changes that are carried over without change to the offspring, giving rise at once to new races or species.

Variations proper are familiar to all of us who have to do with horticultural varieties, for the most of them come under this head. Among them are what DeVris calls retrograde varieties, or those arising through the loss of some character possessed by the species. Sugar corn arising from starchy corn, smooth gooseberries from those having spines, seedless oranges and other fruits, and all similar variations belong here. They are not true fixed types. The original character is supposed to be still present, though in the latent form, always ready to reappear and to do so at once if the variety be crossed with the parent species. Only continuous selection keeps them in a state of purity.

The reassumption of a quality formerly lost is the second way in which variations proper may arise. That is to say, a plant may show some apparently new character, but upon examination it is found to be the same as that possessed by closely allied species, so the inference is that at one time this character may have been common to that whole group of plants. DeVris devotes some hundred and fifty pages to the discussion of what he terms ever-sporting varieties. These are such varieties as exhibit two forms from the same selection of seed. They are seen in cases of double and single flowers also in those having variegated and solid colors. The striking adaptation of some plants to greatly different conditions, such as alpine forms, desert forms, aquatic forms, etc., constitute marked examples of ever-sporting varieties. While such fluctuations are often very striking, they are not permanent, being dependent wholly upon the influence of environment or upon constant selection or both.

It will be seen that this is a characteristic of all variations proper and except when they can be propagated asexually by cuttings, grafting, etc., the varieties can be maintained only by continuous and careful selection.

In contrast with such types as these, resulting from variation proper, are mutations. These are but the appearance of entirely new characters in the plant that from the first are permanent types. They are not dependent upon selection. Crossed with the parent species their tendency is to give a race constant and intermediate between the parents instead of reverting and splitting up as do the varieties according to Mendel's law. DeVris calls these mutations sub-species or elementary species.

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It is held by DeVris that the natural selection of ordinary variations is not sufficient to give rise to new species, but instead that these have their origin in sudden and pronounced changes, namely, mutations. By the same law the appearance of new and permanent types among cultivated plants is due to sudden changes, or mutations.

It is not to be supposed that these changes are of so striking a kind as to be easily noticed by the casual observer. On the contrary a single field of grain that to the average man appears to be of one variety is, according to DeVries and Nilsson, made up of a hundred or more elementary forms. They may be distinguished primarily by distinct marks or botanical characters, and subsequently in culture trials they will be found to differ in a definite and uniform manner as regards yield, quality, etc.

While some of these elementary forms may fluctuate, as all races do in a degree, yet the fluctuations are within definite bounds, and the form is reproduced year after year without real change. Such change as may be brought about within any one of these given sub-species by continued selection is due to variation proper, is not permanent and reverts as soon as selection ceases.

New and greatly improved forms of cereals then can be obtained only by singling out in a field those plants of the elementary species that naturally and inherently give the largest yields. This can be determined of course only by trial. According to DeVris, the improvement of corn should proceed by the same rule. The extent to which this principle of selection can be applied to our average garden and orchard crops can be determined only by further observation and experiment.

Operating upon the principle we have discussed, if one should discover a plant with improved characters, such as increased yield, earliness, etc., that at the same time exhibited new botanical markings, such as a change in the relative size of the floral organs, color of seed, etc., the inference would be that all the characters of this plant would be carried over to the offspring, and a new and permanent race established.

There is no doubt much that is worth considering in the principle of mutations both from the scientific and from the practical side. It applies to all who breed plants in this manner—that they carefully note any unusual though slight peculiarity of the plants they are cultivating.

If this accompanies any particular excellence on the part of the plant, that plant should be selected as the beginning of a new race. Meanwhile a certain, even though temporary, improvement follows from the selection simply of the best individuals, and this old fashioned process will tend to keep our strains good while the mutations are preparing to come our way.

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Progressive Poultry Raising—an Adjunct to Horticulture.

S. P. CROSBY, BRAHAM.

The subject of poultry is an old one. Long before the days of Mother Goose—or even Biblical writings—we read of the hen and her ways and usefulness. There are probably few people living who can remember when eggs were not taken to market,—in sparsely settled portions of the country.

Very little attention was paid to the barnyard fowl seventy-five years ago. Then, and for many years after, the fowls lived as they could,—fed a few scraps from the table, a little grain thrown to them now and then, and for the rest of their living they hustled in the hay-mow, the barn floor, the cattle tie-up. The comfort and convenience of a henhouse among the farm buildings was not thought of. Cross-beams, discarded vehicles or any other old place where a fowl could grip its feet was considered good enough, if thought about at all.

But it is pleasant to contemplate that now more attention is paid to poultry keeping. The profit and pleasure demands and compensates for all the time and money spent.

It is said, and I believe it to be true, that the earnings from poultry last year amounted to $500,000,000. Think of it! $500,000,000! This industry outweighs the gold, silver, zinc, lead, iron, cattle, hog, sheep and mule industries combined. And this, in addition to having one's own fresh eggs, broilers, soft roasters, with plenty of old hens for stews—which, in this age where people like to live well with good things to eat, is of no insignificant importance.

It has been about fifty years since the thoroughbred fowl has been raised in this country. Although some breeds have been introduced from other countries, such as the Leghorns from Italy, the Brahma and Cochin from Asia, the Houdans from France—all excellent breeds—I am pleased to relate that our own country has not been backward in creating a number of superior varieties, Plymouth Rocks, Wyandotts, Rhode Island Reds and others.

I am a strong advocate of the thoroughbred fowl. Among other reasons: They are kept well bred up, are vigorous, have a uniform appearance and are better layers and superior as poultry over the barnyard fowl, or mongrel, found more or less in every locality.

I shall confine my remarks today to the raising and keeping of hens. I have had some experience with turkeys, ducks and geese,

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etc., but consider the adjunct of water, either natural or artificial, necessary for the latter. But it is from the hen we get the natural and most profitable product—the egg.

At the outset allow me to ask for what purposes do we keep hens? First, eggs; second, poultry.

Aside from having vigorous fowls, which is indispensable to a large number of eggs and good poultry, the qualities noted are the only ones I care for in the hen. I am not unmindful of the fact that thoroughbred and practical poultry has profited largely by the attention that has been paid to breeding for fine points found in the "Standard of Perfection" and other authorities, but it is enough to say that sufficient work has been done along that line for the practical poultryman to devote his attention to the hen which lays the most eggs.

I shall not dwell upon the various breeds. To say which variety is the best would be equivalent to the horticulturist saying which apple was the best. Starting out with healthy, vigorous thoroughbred fowls, we will consider briefly the best way to raise chickens.

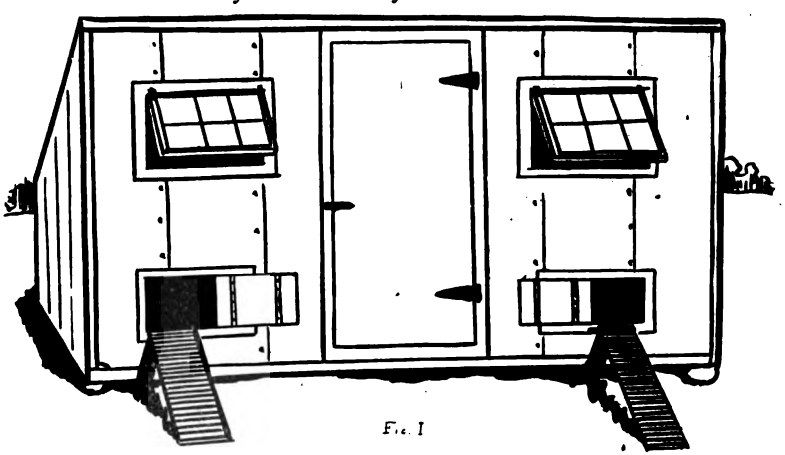

Fig. I

My brooder houses as represented by Fig. I. of the drawings, are twelve feet long and seven wide. The front wall is six feet, two inches in height and the rear wall four feet, two inches. (Right here let me say in parenthesis that I took these dimensions from a high authority, but that in building again I should make the house high enough in the back for a man to stand upright in.) These houses are built upon two shoes, four by six in size, which lie flat. Their ends are champered on the under side, thus giving them a sled runner turn. They are fourteen feet long, which extends them about a foot beyond the ends of the building. An auger hole is bored through each end of these shoes, and for convenience in moving a short chain with a crossbar of iron

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running through each end is used; they can thus be pulled about from place to place as you want them. Owing to the location of my grounds, I use two of these houses facing north and two east, and have them enclosed in a lot of about one acre with a fence eight feet high, the lower part of fine mesh and the upper part of coarser mesh wire.

The floors in these houses are of two thicknesses of boards—breaking joints to prevent the air drawing through. The walls and roof are covered outside with Pavid Roofing material. A door, two by six, is in the center of the front wall, with a window on each side. Each window is of six panes, of eight by ten glass, and hinged at the top, turning outward like a storm window, and can be either buttoned down or held open at different spaces by hooks of various lengths, the largest opening being about a foot, which leaves the window at an angle sufficient to give plenty of air in warm weather. The advantage of hinged over sliding windows is that in stormy weather rain and wind are not so apt to beat in, and yet free ventilation is secured. The windows are covered with wire netting on the inside.

A slide door, a foot wide or square, is made at the floor near each end in the front of the building for the chicks to pass through into a yard (a small yard while they are too little to go into the larger yard) of the width from the side of the door to the end of the building—two for each brooder house. These small yards are of small mesh, or chicken wire, with a covering of the same to prevent hawks and crows from carrying off your chicks. These small yards, or pens, are in four parts, hinged or hooked together, so that at six weeks—or when you consider your chicks large enough to find their way back to the brooder house—you can fold your pen and lay it away.

I use two No. 2 Peep O'Day brooders in each house, placed a few inches from the walls, so as to allow a free passage of air to the intake openings in the sides of the brooders.

The No. 2 is a larger and a more expensive brooder than the No. 4; either can be used well. The hinges of the the brooder cover are changed so as to bring them at the back, which allows the cover to turn up against the back wall of the building out of the way. The lamp is underneath and drawn out on a slide.

These brooder houses are well made and are built to be taken out on the range and moved about from time to time for new feeding places. I raised about seven hundred chickens in these four houses. I do my hatching at present in the basement of my dwelling house

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with incubators of 220 and 120 egg capacity, made by Chas. A. Cyphers and known as the Model incubators. They are hot air machines and do very good work in bringing out chickens.

Houses for laying and breeding hens. Fig. 2 represents a perspective view of a portion of the new continuous house used at my poultry yards. It is 140 feet long by twenty in width, having seven compartments, 20 by 20, and a capacity for 500 hens, one compartment being used as a storeroom for keeping feed. One hundred hens can be accommodated in each part without overcrowding. The walls are eight feet with roof six feet six inches in the center. The litter or scratching material is kept in the roof or attic, and a scuttle hole two feet square is in the center of the ceiling in each compartment to

Fig. 2

put it through as needed. There are two windows five by two and a half feet on the south side, extending to the floor, enabling the hens to get a good supply of sunlight.

The floors are double with tar felt building paper between. The building rests on stone piers, raising the building about a foot above the ground, so a dog or cat can go under in case you are troubled with rats, which are more or less in all poultry houses.

In the winter time I use muslin screens in the windows, which is all that is necessary for the welfare of the biddies. It keeps the air good and also keeps out draughts. Best results have been obtained in this way. In extremely cold weather (in our locality mercury stands between 25 and 40 below for two weeks or so after Christmas) I shove up the sashes (which can be done from the outside) during

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the nights until the cold spell passes. In the spring, summer and until late in the fall, I use wire netting screens. This is all the ventilation usually needed. If more is wanted, the door into the yard at the back can be opened and the scuttle hole above as well.

Fig. 3 represents a diagonal section of a section, showing feeding troughs, dust baths, breaking up pens, or jails, and the scuttle hole above, through which the litter is thrown. The feeding troughs at the bottom are made of half inch boards, the top or side being six inches high, and they are four inches wide. The slats are laths two inches apart. The cover on top is at an angle sufficiently steep to

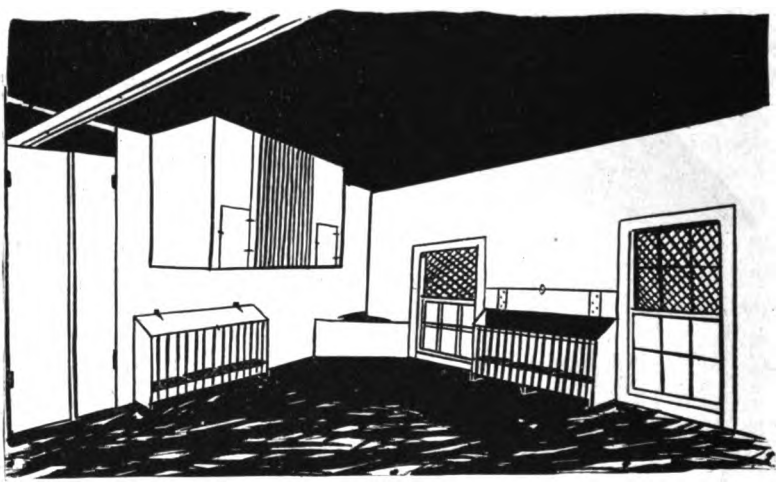

Fig. 3

keep the hens from standing on it. Ground feed is used in the trough. Several ground grains—short bran, middlings, red dog flour, almost any ground grain, can be used in about equal parts, to which is added, if not otherwise fed, about ten per cent of good ground meat scrap and the same amount of oil meal.

Ground feed is kept before them all the time, and they eat as they please. I may add that I had placed at the front of the trough a lath, at an angle of about 45 degrees, to prevent the fowls throwing out and wasting the feed.

The other trough in the compartment is similar to this one, but divided into three parts, containing respectively ground oyster shell, grit and charcoal, which should always be before the hens. Above this trough is the breaking up pen divided into two parts, in which to imprison broody fowls. In one corner is the dust bath which is a simple arrangement, the corner being boarded off about two feet high and filled with either wood or coal ashes.

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Fig. 4 represents the other diagonal half of one of the houses. Here in the center is the feeding car which runs on a track above made of tubing and running through the entire building, 140 feet. This car I load up at feeding time in the store room, which is at the east end of the building. The car is ten feet long by two and one-half wide, amply sufficient to hold all the baskets, pails of water, etc., needed. There are double doors between the compartments swinging each way. Doors are of muslin and very light. The car is rounded at each end so that in striking the doors they easily open and close

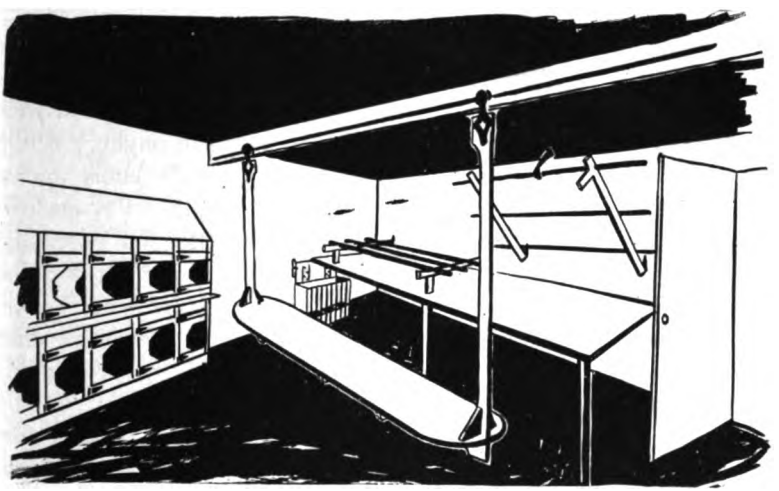

Fig. 4

after the car passes. I feed as I go along, using well balanced ration of wheat, oats and corn and occasionally other grain, throwing it in the litter, so the birds must work for their dinner. It is well to keep fully six inches of litter. Any kind of dry straw, hay or leaves.

This car performs another service. The dropping boards are three feet from the floor, and the space between the floor of the car and the dropping board is about enough to allow a bushel basket on the car to be on a level with the dropping board. Thus with a broad hoe made for this purpose the boards may be scraped into the baskets very easily. Zinc or tin baskets are preferred. And the car runs directly in front of the roosting places, thus making very speedy work of this job. The droppings are carried out and dumped near the garden and made use of as manure.

The roost platform is made tight and runs along the whole of the back wall except the space for the door. It is four feet ten inches wide and three feet above the floor—a man may get under it com-

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fortably when wanting to catch a bird. There are three roosts framed together, in two eight foot sections, one foot above the platform, and hinged to the back wall; they can be turned up and hooked to the ceiling out of the way while the dropping board is being cleaned—as shown in Fig. 4. The rear roost is twelve inches from the wall, and the spaces between the next two are sixteen inches. Roosts are made of two by fours placed on edge with the upper corners rounded off.

In each room there are two tiers of nests, eight in each, constructed to be used as trap nests if desired. The trap nest is the one to use if you are making a special business of poultry. By a simple device the hen goes into the nest, lifting up the catch as she goes in, which falls after her, and she cannot get out till liberated. The numbered bands are used and a bulletin kept, showing which hens lay and which do not. This is the only way to tell the laying (and paying) hen.

The parks, or yards, are on the north side of the house and are the width of each pen or room, and 200 feet in length. For enclosing the parks I use coarse mesh poultry wire stretched on posts eight feet high, with convenient gates opening into each pen from the other. Fine mesh, or chicken, wire is also stretched along the space between the poultry house and the ground on this side—thus preventing chickens getting under the house and also keeping cats and dogs from getting into the yards when under the house after rats, etc.

Time will not permit me to say much. It is easier to raise fowls for poultry than for eggs. When your chicks are old enough to determine the sex, separate the cockerels and push their growth as much as possible. Ground feed, grit and plenty of water all the time is absolutely necessary. When cockerels are six to ten weeks old, they are suitable for broilers, older than that they are soft roasters.

The months of April and May are the most desirable for hatching. I prefer April. Chicks hatched in this month give you broilers for June, and they bring a good price in the market. It is well to kill off early all cockerels except those for breeding purposes and a few kept along for family use. It will reduce your feed bill.

In my poultry yard is a natural growth of trees, together with some apple and plum trees—and this brings me to the second part of my subject. The feasibility of keeping and raising poultry in connection with horticulture. Do they work well together? My answer is that they certainly do. I know from experience. Our philosophy taught us in our school days that no two objects could occupy the same place at the same time. The old axiom is a paradox when applied to poultry and horticulture. An orchard of fruit trees cannot

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fail to be benefited when enclosed as a poultry park, and a more ideal place for rearing chicks cannot be found. Nature furnishes no better place, and the great economy of space is apparent.

Poultry is a great advantage to fruit raising. The work chickens will do in ridding the orchard of insect pests is great. Some poultry men claim that poultry does more than spraying, as the healthy chick and biddie are after the insects all the time, always ready to make an effort. The droppings of poultry are also beneficial to the orchard. It is claimed by one man that his trees doubled their yield from this cause. It has been brought out at one of our state department stations that one hen makes seventy-five pounds of manure in one year, leaving thirty-five upon the dropping boards and distributing the rest over the ground. With 200 hens, which is a small flock for a horticulturist—he would have 9,000 pounds of fertilizer well distributed over his orchard.

The shade of the old apple, or some other tree, is absolutely necessary to poultry welfare.

Any fruit growing high enough to be out of reach of the hen is surely benefited—giving better crops and growing more rapidly than elsewhere. In the test made and reported by Cornell University, the presence of chickens was found to accomplish more in killing injurious insects than all the spraying liquids.

As I have tried to guard against this paper being too long I am aware that I have not gone exhaustively into many points which might be of interest and profit. I fancy I can hear the silent criticism that my ideas and plans may be good if one has the money to spend. My answer is that it is well to do well whatever you do if you are after the best results, and poultry keeping is no exception. A properly built house where hens can be comfortable is as essential as a comfortable barn for cattle. It costs something to get started, but it is known to pay and to make a most profitable business.

Mr. E. B. Miller: I would like to inquire in regard to that scratching shed.

Mr. Crosby: That is simply a place for fowls to scratch, a scratching shed for the fowls to go into. The house is twenty by twenty, and they roost in the same room together—amounting to something like four hundred square feet.

Mr. E. B. Miller: Is not corn a heating food?

Mr. Crosby: I do not feed them much except in the fall and winter. I do not feed the whole grain at night. If they are hungry at night I offer them soft feed.

Prof. Wm. Robertson: In regard to the construction of one of your houses, I did not get the height.

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Mr. Crosby: It is eight feet high, double wall and sheathed on the inside.

Prof. Robertson: Anything filled in between the walls?

Mr. Crosby: No, it is simply sided on the outside.

Prof. Robertson: Is there anything between that and the sheathing?

Mr. Crosby: One thickness of paper.

Prof. Robertson: Matched boards inside?

Mr. Crosby: Yes, sir.

The President: You say you have roofing on the outside?

Mr. Crosby: That is the brooder house.

Prof. Robertson: What is the depth?

Mr. Crosby: Twenty feet—it is twenty by twenty.

Prof. Robertson: Same height in the back?

Mr. Crosby: Yes, same height.

Prof. Robertson: It comes right to a center does it?

Mr. Crosby: Yes, sir.

Mr. C. C. Hunter: What do you think of canvas as a window protection against cold?

Mr. Crosby: I use what is generally used, muslin, common ordinary muslin. Canvas would not be so bad if it was not so thick. The idea is to keep the draught from the fowls, but keep the air good. Hens will stand a good deal of cold if you keep the air pure. You cannot keep hens in good condition unless you have good air, and you cannot expect to get eggs unless your hens are in good condition.

Mr. Hunter: How do you hatch?

Mr. Crosby: With the incubator.

Mr. A. P. Morton: Do you think a cement floor or a concrete floor would be as good as any other?

Mr. Crosby: I have that kind of a floor in my old house. A concrete floor keeps out the rats. It is quite expensive, but it certainly keeps out the rats.

Mr. Morton: Is there any objection to it?

Mr. Crosby: Oh, no, it is all right.

Mr. R. A. Wright: Isn't the floor cold?

Mr. Crosby: I keep litter on the floor all the time.

Dr. A. H. Street: Do you warm the house to get eggs?

Mr. Crosby: No, I have no heat of any kind in the hen house.

Mr. E. B. Miller: In regard to a house being permanent, I have figured up the cost of a house I built three years ago. I put in a concrete floor, putting in a good bottom, and then keep it littered with straw, and that keeps the rats out; they cannot get in that house.

Mr. Crosby: That is a good idea.

Prof. Robertson: What is the size of those windows in the brooder house?

Mr. Crosby: I think they are two and a half feet.

Prof. Robertson: Are the doors on spring hinges?

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Mr. Crosby: Yes, as the cart goes through the door swings both ways.

Mr. W. A. Buggs: How do you ventilate?

Mr. Crosby: Through the muslin curtain more than anything else.

Mr. F. B. McLeran: I would like to inquire whether with that construction he can keep the temperature of the house above freezing when it is from thirty to forty degrees below outside?

Mr. Crosby: It is warmer on the inside than it is on the outside, but when it is very cold I put up the window on the outside.

Mr. McLeran: Do the hens freeze their combs?

Mr. Crosby: No, sir, the hens or roosters do not freeze their combs. That is a good test.

Mrs. P. H. Frye: Does the water freeze?

Mr. Crosby: Sometimes it does in cold weather; you have to renew it occasionally.

Mrs. Frye: Does it just freeze in very cold spells?

Mr. Crosby: In very cold weather I warm the water, and if it should begin to freeze I renew it with more warm water. There is another thing I wish to speak of: I have around the roost a curtain which I can let down, and in very cold weather I pull the curtain down over the roost. The curtain comes right down, the bottom of it comes to the dropping board.

Mrs. F. H. Gibbs: Do you give any wet food, any soft food?

Mr. Crosby: I do not make a practice of doing that, but anything from the house in the way of scraps, table scraps, I mix with bran.

Mrs. F. H. Gibbs: Then your feed is fed dry in boxes?

Mr. Crosby: Yes, it is all fed dry, it seems to be a better idea than to give it in a mash.

Mr. George J. Kellogg (Wisconsin): What breed do you carry?

Mr. Crosby: The white and barred Plymouth Rocks.

Mr. M. L. Gjestrum: I would like to know whether the droppings from a flock kept on half a dozen acres would not be too rich for the orchard?

Mr. Smith: I cannot say how many could be kept in an orchard without doing injury to the trees.

Mr. Gjestrum: I would like to know if any one has ever tried it?

Mr. Smith: I have. In one of my yards I have about one hundred trees, and I have fifty fowls in that yard. The yards are about two hundred feet in length and average thirty-five feet wide.

Mr. A. Wilwerding: In regard to ripening: Do you keep the hens in the orchard while the fruit is ripening?

Mr. Smith: O, yes, I let them stay right there; I don't care for the windfalls anyway. The hens want green food, and I keep the winter conditions the same as in summer just as much as possible.

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Our Compliments to Green.

A TOAST IN RHYME, PRESENTED BY HON. G. B. BRACKETT AT THE ANNUAL SOCIETY BANQUET, DEC. 5, 1907.

There comes a time to speak in rhyme
  About the men we've seen:
And here's a toast unto our host,
  "Our Compliments to Green!"

Stories are told of apples of gold
  That 'broider your prairie's scene:
A great nation greets your Station
  Under censorship of Green.

How to know what fruits to grow,
  Is the society's topic, I ween:
Its members work and never shirk
  Under the guardianship of Green.

There's Elliot rare, with Wedge to share,
  But Samuel is the dean:
And Hansen comes and talks of plums—
  When we banquet here with Green.

The best advice on market price
  Nils Anderson's sure to glean:
Kellogg's "long suit" is choice small fruit
  When we talk things o'er with Green.

Philips, ne'er late and quite up to date,
  Discourses on orchards he's seen:
And Yahnke forestalls the joke he recalls
  In the meetings held with Green.

Nebraska's son, C. S. Harrison,
  Is a man of discernment keen:
Landscape art he knows by "heart"
  When we talk things o'er with Green.

I'd speak of all, dare I recall
  The names of all here seen:
But one of many is rare Seth Kenny
  At the good right hand of Green.

Patten with ease talks of his trees
  And all that his work may mean,
But the state's prize charm is Experiment Farm
  Under directorship of Green.

"THE SOCIETY!" Three cheers to its forty-three years!
  Three cheers to Pomona, Queen!!!
To bugle call we'll respond each fall—
  And now—three cheers to Green!!!

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Training and Pruning the Currant and Gooseberry.

WYMAN ELLIOT, MINNEAPOLIS.

In order the more fully to make plain and to give a better understanding of the management and growing of these fruits, there are several indispensable elements and conditions which, strictly speaking, do not come under the scope of the subject allotted to me, but which should be considered, so that beginners, amateurs and commercial growers may have a clearer idea of what is required and that not one but all of the essentials to success may be fulfilled. I will enumerate six special requirements for success in growing the currant and gooseberry. They are, what to plant, time to plant, how and where to plant, frequent cultivatings, judicious yearly pruning and watchfulness to guard against injurious insects and diseases.

First. It is very important that the stock planted should be young, healthy, vigorous and productive.

Second. Planting may safely be done with the currant from September first, and with the gooseberry from October first, to the freezing up of the ground, or in the spring as soon as the frost is out until May first in this climate. Gooseberries in particular are very susceptible to warm days in spring, starting to grow at a very low temperature: therefore those early planted do the best. Plant four by five feet apart in small gardens and five by seven feet apart for commercial purposes, in a soil rich in fertility, moist but not wet. In planting on dry ground, a sufficient amount of moisture is maintained in small plantations where cultivating with the horse is not feasible by using plenty of coarse manure, sawdust, chip dirt, wood and coal ashes for a mulch. In larger plantations, frequent clean shallow cultivating to aerate the soil and conserve the moisture, and hoeing to prevent the growing of grass and weeds among the bushes, is found most economical.

These are two of the hardiest types of small fruits, and, though extensively grown, they are the most badly abused and neglected as to cultivating, pruning and training. It is a mistaken idea to suppose that currants and gooseberries can thrive and produce good crops, planted in unfertile, barren soil. Rich bottom lands produce the finest bushes and fruit, but these fruits can be advantageously grown on sandy soils if attention be given to the use of fertilizers or mulching with rich manures. Clover, alfalfa or old pasture sod, turned under deeply, is excellent if thoroughly worked up before planting. Freshly manured land is not as good as that which has been heavily manured and a hand crop

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grown upon it. Utilizing the ground between the rows and hills with some kind of hoed crop the first year after planting pays for the use of the land and care of the brushes and proves no injury to them.

I have grown currants and gooseberries more than fifty years, both as an amateur and commercially, and yet I find each year there is something new to be learned regarding their care and management. It is said that we are never too old, or too young, to be taught by experience, that great educator of the human family, and that knowledge so bought is the most lasting. Perhaps that is the best way of gaining it, if not too dearly bought.

How not to prune. A neglected gooseberry patch.

Pruning.—F. R. Elliot says, "Certain principles of the nature and habits of a tree, vine or bush must ever be borne in mind in pruning, to insure the best success."

Barry says, "It is not only necessary to know what and why, but also how to prune." This is a very important part of their training and should never be neglected. Judgment must be exercised in pruning, as in every operation in growing fruits. Each tree or bush must be considered individually, as no two bushes grow exactly alike, and each should be treated according to its needs.

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With the currant and gooseberry, I recommend fall rather than spring pruning. We commence as soon as the leaves have partially fallen, trimming out all drooping branches, to encourage an upright growth, all dead and dying wood, and all sprouts except two or three of the strongest for renewing the fruiting wood. In removing the sprouts, I prefer pulling them rather than cutting them off close to the ground, and where they do not come off easily with a good, vigorous pull, I remove the soil at the base of the sprout and cut it off as low down as possible. After the bush is trimmed and all grass, roots and weeds removed, mound up a little, covering all exposed rootlets. This operation serves as a fall hoeing and is much easier done then than in the spring, when the grass and weeds have more strongly fastened their roots in the ground—and this pruning away of all surplus wood and sprouts in the fall gives added strength to the roots for sustaining and stimulating that part of the bush remaining. Any extra long branches or sprouts are shortened in by cutting back to a strong limb or shoot to serve as a leader. With the gooseberry in particular, I have discovered that indiscriminate shortening or trimming is bad practice. If you take away one-half or two-thirds of a strong sprout, the buds nearest the top grow long limbs, which at first are very tender and many times are blown off by the wind, thus preventing this part of the brush from growing bearing wood for the next crop of fruit. The main object in pruning fruit trees and bushes is to give added strength and vigor to help them produce more and finer fruit than they otherwise would. An unpruned bush produces small, inferior fruit.

Under ordinary management, a plantation of currants and gooseberries will last only six or seven years, but with judicious pruning and attention to enrichment of the ground they will produce good crops ten or twelve years. Young and vigorous wood produces the finest fruit: therefore, all wood over four years old should be cut out and the strongest sprouts left to take its place.

Burn all limbs, brush and leaves trimmed off, to destroy any fungous germs from infectious diseases or eggs and larvae of injurious insects. Spreading the ashes around the bushes for a fertilizer is a good practice. In pruning maintain an open top, that air and sunshine may penetrate the bush to prevent mildew, also to facilitate the picking of the fruit.

When I first began growing gooseberries, I had a fine lot of bushes, hanging full of fruit. Without warning their leaves took on a ragged appearance, and on close examination I found them infested with small

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green worms eating voraciously. The whole crop of fruit was destroyed and the bushes left in a half dying condition. Discouraged, I dug them up, as I did not then know how to prevent the worms from eating the foliage. Now an experience of this kind would not be in the least discouraging, for, believing that "an ounce of prevention is better than a pound of cure," we start early, worms or no worms, by sprinkling the bushes thoroughly when the leaves are half grown, using either a teaspoonful of paris green or an ounce of powdered white hellebore in a pail of water. The hellebore should be put in a small cotton sack and soaked in the water two hours before using; then it will not stop up the nozzle of the spraying machine or the fine rose on the watering pot. Sprinkling each ten days for a month will surely destroy the first brood of worms. You must keep a close watch for the second brood from August first to October first, and when discovered lose no time in giving all your currant and gooseberry bushes a sprinkling with the above remedies. Eternal viligance is the price of successful fruit culture.

The best kinds for planting are the Houghton, a seedling grown by Abel Houghton, Lynn, Mass., previous to 1854; the Downing, a seedling from Houghton crossed with an English variety; and our new seedling, the Carrie, from Houghton seed. These are today the most promising varieties in cultivation in the northwest. These are much more desirable than English varieties and their descendants, on account of being healthier and freer from mildew.

Currants and gooseberries are more and more sought after each year, and an American garden is seldom considered complete without a full supply of these fruits for domestic purposes.

Mr. Geo. J. Kellogg (Wis.): A few years ago Mr. Elliot advocated paris green for killing the currant worm. He said he did not know how it would affect the health of the people until after he had tested it upon the city urchins, and after they ate a peck he said he put the fruit on the market. Now he has gone back to hellebore.

Mr. J. F. Benjamin: I would like to ask Mr. Elliot whether he prefers layering or cutting?

Mr. Elliot: I propagate both ways. I think I prefer layering to cuttings. I think you will have a little better success. If I had a propagating house then I should use cuttings entirely.

Mr. Benjamin: In trimming your bush would you layer them down instead of trimming them out?

Mr. Elliot: If I wanted fruit I would cut them out, but for good vigorous plants I would layer them.

Mr. E. F. Pabody: It has not been customary to trim gooseberry and currant bushes; would you recommend trimming?

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Mr. Elliot: Most decidedly I would, and that is the reason why I say the currant and gooseberry are the most neglected fruits we have. The raspberry and blackberry are carefully looked after, but the currant and the gooseberry are neglected, and they are usually grown in a fence corner in a mass of weeds. The old wood may be partially dead or dying, but you never think of taking it out. I recommend the thorough pruning of the old bushes, leaving three or four young and vigorous shoots for renewals and taking out the old wood.

Mr. Pabody: Can that be done in the spring?

Mr. Elliot: Yes, it can be done then, but I prefer doing it in the fall.

Mr. Pabody: Would you do it every year?

Mr. Elliot: Yes, sir, each and every year.

Mr. W. H. Horton: How long will the currant and gooseberry last?

Mr. Elliot: Some six or seven years, but with proper treatment they will last from ten to twelve years. The old Carrie bush is fourteen years old and bore three and one-half quarts this year.

Mr. Benjamin: When would you take them up, in the fall or in the spring?

Mr. Elliot: Take them up in the fall.

Mr. A. O. Hawkins: Is the Carrie subject to mildew the same as the Houghton and the Downing?

Mr. Elliot: We have never discovered any on our bushes. We have grown several thousand and watched them carefully through four years—it has been under observation that length of time—and we have never had any trouble with mildew. Some years we have had the Houghton ruined with mildew, but the Carrie has never had any.

Mr. Benjamin: How does it stand?

Mr. Elliot: It stands upright.

Mr. Benjamin: Does it stand as upright as the Houghton?

Mr. Elliot: It stands a little more upright than the Houghton, but its fruit bears it down, and you have to keep pruning it up.

Mr. Benjamin: Does it have any thorns?

Mr. Elliot: On the young wood there are thorns, not as large as on other varieties, or on several other varieties. The second year the thorns begin to disappear and come off. The third year you have no thorns at all; it is perfectly smooth wood, and that is quite an item with the pickers. Last year we had fourteen, and after picking five hours I asked them if their hands were full of thorns, and they said that the foliage protected them so they did not get any in their hands.

Mrs. M. A. Knowles: Can you prevent injury by currant worms by spraying before the fruit sets?

Mr. Elliot: If you will spray before the fruit sets and spray every ten days afterwards, you can take care of them, but as soon as you discover the second crop you must attend to them at once; you must spray with paris green or white hellebore.

Mrs. Knowles: What is the cause of mildew?

Mr. Elliot: It is a fungous disease.

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Spraying Experiments and Suggestions.

PROF. F. L. WASHBURN, STATE ENTOMOLOGIST.

One pound of paris green in every fifty gallons of 3-3-50 bordeaux mixture is perfectly safe for use on tender foliage of the apple and plum, as well as on young tomatoes in the greenhouse.

In Press Bulletin 31, issued by the Experiment Station in April of the current year, on page 6, the writer advises using three pounds of paris green in every one hundred and fifty gallons of the 3-3-50 bordeaux mixture. A few conservative horticulturists have expressed a doubt as to the advisability of such suggestion, claiming that paris green at that strength will burn foliage. The entomologist desires to state that he has personally, within the past two weeks, repeatedly tested this mixture by spraying it on tender growth of apple, plum and young tomato plants (the latter six to eight inches high and in greenhouse) without appreciable injury, and does not hesitate to recommend it as a spray for killing both fungous growths and insects.

Paris green in that amount used in water alone would, of course, be very dangerous to the foliage, but, as is known by many, the presence of lime, neutralizing the acid found in paris green, makes it quite a different thing when used in conjunction with bordeaux made as directed in the press bulletin referred to. We would not, however, counsel using it any stronger. Six pounds of paris green in one hundred and fifty gallons of bordeaux mixture was found to injure young tomato plants. When we use paris green alone in water we employ the proportions, one pound to one hundred and fifty gallons simply to prevent injury to our trees. Were it possible to have more poison in the solution we would be better enabled, by putting more of the poison on the fruit and leaf, to make the killing of biting insects more certain. If then, we can make a stronger poison solution by using bordeaux, why not do so?

A publication just received from the United States Department of Agriculture (Farmers' Bulletin 127, by C. L. Marlatt, April 14, 1908) states (page 11) that "If it be desirable to apply a fungicide at the same time as on the apple, for the codling moth and the apple scab fungus, the bordeaux mixture may be used instead of water, adding the arsenical to it at the same rate per gallon as when water is used. The lime in this fungicide neutralizes any excess of free arsenic and makes

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it an excellent medium for the arsenic, as it removes liability of scalding the foliage, and *permits an application of the arsenical, if necessary, eight or ten times as strong as it could be employed with water alone.*" The italics are the writer's. Government experts, be it said, are careful in making statements of this kind.

In conclusion, the more conservative of those who have always been accustomed to use paris green at less strength in bordeaux, and prefer to follow the old way, will probably continue to do so. We shall, however, use the stronger mixture, and are using it on the Experiment Station grounds at every spraying of apples and plums, where liquid bordeaux and paris green are employed, at the strength recommended in Press Bulletin No. 31, namely, three pounds of paris green in every one hundred and fifty gallons of the 3-3-50 bordeaux mixture.

F. L. Washburn,
State Entomologist.

St. Anthony Park, Minn.
May 20th, 1908

A copy of Press Bulletin No. 31, "Suggestions to those contemplating spraying" will be mailed to any citizen requesting same.

Question. What is the best all around apple for the farmer of Minnesota to plant?

Mr. Schultz: If I were to answer that question, I would say the Wealthy. If I were to buy a home apple, I would buy the Wealthy and them some more Wealthy, then some more Wealthy still.

Prof. Hanson: How about the winter of 1885?

Mr. Schutz: O, well, we do not expect to have another such a winter.

Mr. Philips: If I should ask what is the most profitable apple, the Malinda or the Wealthy, what would you say?

Mr. Schutz: I would say the Wealthy.

Mr. Philips: How many Malindas are there raised in your neighborhood?

Mr. Schutz: Only a few. I do not think the people want it.

Mr. Philips: It is a hardier tree than the Wealthy, but it does not stand as much hardship. The governor sent me to Iowa to investigate the Malinda, and I found orchards where the Malinda trees were bearing and every other tree was gone. It shows that it is a remarkably hardy tree. This year I had Malinda apples from topworked trees, and I do not think I had half a dozen Wealthys that would bring me as much money as the top-worked Malinda trees. I know we are up against it when we put anything up against the Wealthy, but if I were to recommend my boys to set out apple trees I would have them put in as many Malindas as Wealthys, but they should alternately top-work the trees.

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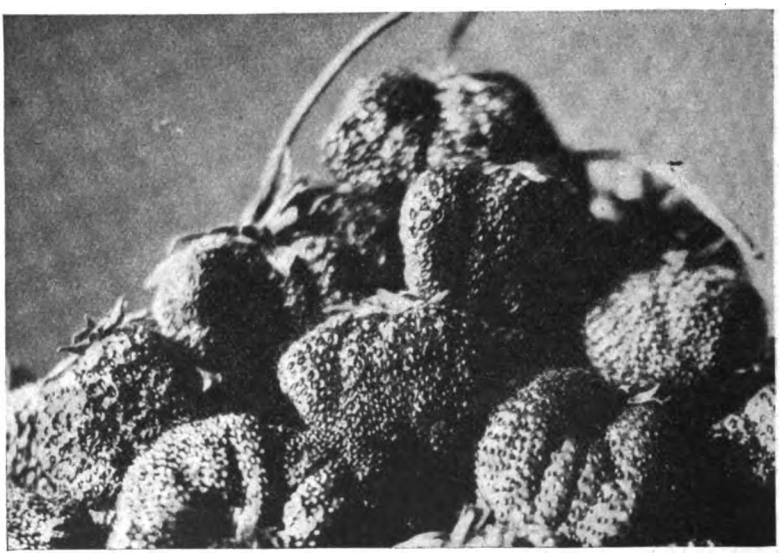
My Experience in Growing Seedling Strawberries.

MRS. N. HOSS, FERTILE.

Five years ago in June while picking over Warfield strawberries for canning I noticed some seeds in the bottom of the dish. I washed the seed and dried them, and in a few days I sowed them in a box, where they came up nicely. The year after we set out the plants in rows in the garden, and they grew very large that summer. The second year, when they began to blossom we removed all the blossoms as they appeared. The third year they were almost loaded with the largest and nicest fruit that you ever saw. The fourth year they did not do very well, for the strawberry crop was poor that year.



Strawberry seedlings grown by Mrs. N. Hoss, Fertile, Minn.

A year ago last May we set out about three hundred young plants from the runners of these seedlings, from which we picked several hundred quarts of the largest and finest berries.

This summer the vines are not all good from the seedlings, but we selected the best by planting them over. The vines and leaves are very large and thrifty, and the berries are altogether different from the other sorts. They are a little later than the Senator Dunlap and Warfield and others. We had berries from the seedlings long after the others were gone. It was when they were three years old I had that picture taken. I think more of my seedlings than I do of the others. Strawberries are my best fruit.

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IN MEMORIAM.

LOUIS LIETZ, DOVER, MINN.

Louis Lietz was born in the province of Pozen, Germany, March 10, 1843. He came to Rosendale, Wis., in 1857, removing to Dover, Minn., in 1864, where he settled on a farm. He was married to Miss Caroline Biers on June 19, 1878. Three children were born to this union; two, Mary and Fred, with their mother, still live to mourn the loss of a devoted husband and loving father.

Mr. Lietz for many years took much interest in horticulture. He became a member of Minnesota Horticultural Society in 1894. Although never what might be called an active member, he always kept in close touch with the workings of the society. He was quiet and unassuming in manner, was a great reader and close student of nature. Mr. Lietz early became convinced of the value of evergreens as a windbreak on the farm. He not only set many himself but sold thousands to his neighbors at a moderate price. The same could be said of his work with the small fruits and apples. Although Mr. Lietz' work was not widely known over the state, he has done a noble work in his community. He has set an example that will not soon be forgotten. The writer personally knew Bro. Lietz for more than forty years, and during that long period never heard one word or saw one act that would tarnish the enviable reputation that Mr. Lietz left when he passed to his reward on April 14th. The interment took place in Dover Evergreen Cemetery on Good Friday, April 17th. His remains were followed to their last resting place by a large concourse of relatives and neighbors. —Forest Henry.

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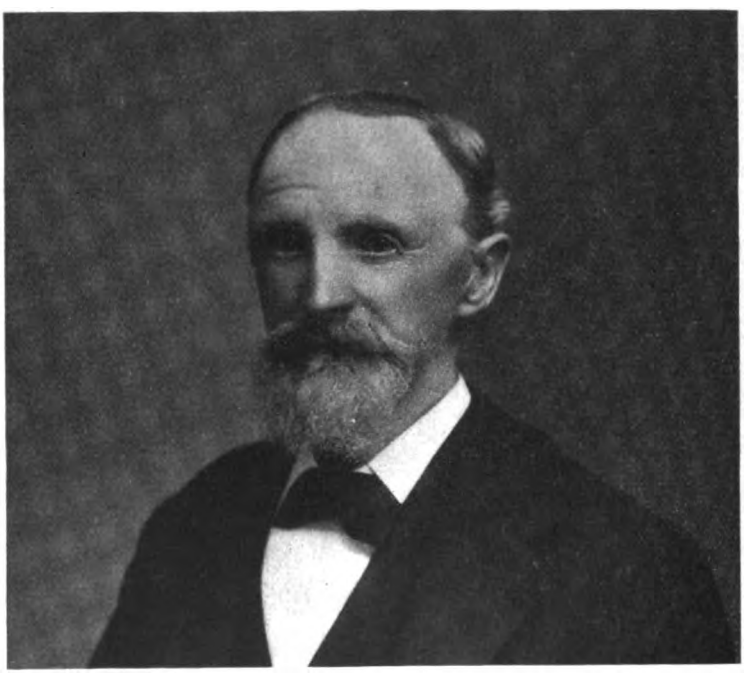
IN MEMORIAM

Richard C. Carroll.

Died February 26, 1908.

Richard C. Carroll went to his reward on February 26th, full of years and honor, surrounded by his family and friends who mourn his loss.

Mr. Carroll was born at Piltown, County Kilkenny, Ireland, about seventy years ago. He came to America while a young man and lo-



Mr. R. C. Carroll.

cated at St. Louis. He spent ten years in horticultural work for Norman Coleman, formerly commissioner of the United States Department of Agriculture, and at the Shaw Botanical Gardens in St. Louis, Mo. In 1864 he went to Fort Benton, Mont., where he remained for four years in the mercantile business. In 1868 he located at Lake City and engaged in farming. He was married December 2nd, 1871, to Mary A. Rahilly. Six children were born to them, three of whom are

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living. He became foreman of the Horticultural Division of the University Farm in the spring of 1890, and served continuously up to within a few days of his death. Of all the employes at the farm none were more faithful or loyal to it. This work was always foremost with him, and his private affairs were often neglected to take care of University Farm matters. He was energetic to a fault and never spared himself in any undertaking.

Mr. Carroll loved a gentle joke, and none knew better than he the force of a pointed repartee nor better how to give one. Many of his quaint and pithy sayings will long be remembered by his friends at University Farm. All who knew him well enjoyed this trait, so characteristic of his countrymen, of whom he was always proud. He was generous and kind, and although severe at times in dealing with his men it was always with the object of getting them to do their duty faithfully. All who ever worked with him will remember his words, "Be lightning boys." He was kind hearted and often loaned money to those in need or gave outright to some worthy cause. He had many friends among the faculty, the students and others who have been connected with University Farm for nearly a score of years, who will sincerely miss him. At his funeral five of the pall bearers were members of the faculty, the other one being the farm foreman, who had been his warm friend for many years.

Mr. Carroll was a man who loved the simple things of nature. He liked birds and flowers, shrubs and trees, and felt himself a part of these, and his greatest pleasure in life seemed to be to bring about their improvement. His was a useful life. He loved especially to care for plants, although he was interested in everything that pertained to rural life.

I shall always remember him as a true-hearted, faithful man, who meant to do exactly right; to offend no one, and to live with a conscience void of offense toward God or man.

Samuel B. Green.

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SUMMER MEETING
OF THE
Minnesota State Horticultural Society, 1908.

The summer meeting of the society will be held as usual in Armory Hall, State Experiment Station, St. Anthony Park, Minn., on Tuesday, June 23. This date has been selected for the purpose of holding the meeting at the height of the strawberry season in the vicinity of the Twin Cities, which will still give opportunity for the exhibit of late ripening varieties from points south of here and early ripening varieties from points north. Large premiums for the exhibit of this fruit are again offered. Every variety exhibited should be carefully labeled so that proper comparisons may be made.

A large exhibit of roses and peonies is also desired, and it is hoped the exhibit may not be confined to one or two of the larger growers. Let each member attending who has flowers, even if of not more than one variety of roses or peonies, etc., bring that one kind to the meeting. Please note the radical change in the method of offering premiums.

There is more of interest than ever at the experiment station to attract the attention of our members; the new movement in the way of experimentation in plant breeding should be particularly noted. Plan to be on the grounds early in the day and spend the forenoon in looking over what is being done with the officials who have charge of the work there, a number of whom will be on hand to escort parties about the place.

A basket lunch will be spread in Armory Hall at 12:30 o'clock, which is for members of the society and adult members of their family or accompanying friends, and all who take part in this function are expected to contribute towards it, as this is the only way in which the spread can be prepared. *All food placed on the table is considered as belonging to the gathering as a whole, and not alone to the party that may be seated adjoining.* Sandwiches and coffee will, as usual, be contributed by the association. Strawberries will be furnished for the table from those presented for exhibition after the judging is completed. *All those taking seats at the tables must be provided with tickets*, which can be obtained by members for themselves and accompanying friends from a committee in the hall who will be known by their wearing the society badge.

Any present who are not members of the society may become such for the current year by the payment of $1.00, annual fee, to Secretary Latham, or $10.00 for a life membership.

The afternoon session will begin at 2 o'clock and end at 3:30. It will be in large measure an impromptu program and, to some degree at least, in the nature of object lessons with the fruits and flowers exhibited at the meeting. A lively and helpful time may be expected. A question box will be provided for any who would like to take advantage of this method of securing information.

HOW TO REACH THE GROUNDS.

Take the Como-Harriet or Como-Hopkins car, either in St. Paul or Minneapolis, and get off at Commonwealth Avenue, where carriages will be found waiting to carry the visitors to the grounds, one-half mile distant, from 9:30 A. M. to 1:30 P. M.

SAMUEL B. GREEN, President,
St. Anthony Park.

A. W. LATHAM, Secretary,
207 Kasota Block, Minneapolis.

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ENTRIES.

All entries must be in the hands of the secretary not later than Saturday, June 20. No entries can be received at the meeting.

The size to which the exhibition made at the summer meeting has grown makes it impracticable for entries to be received on the day of the meeting, the necessary clerical work connected with these entries requiring considerably more time than is then to be had. Exhibitors are urged to send lists of their entries to the secretary at as early a date as possible, and under no circumstances later than the date noted above. Entry blanks for this purpose will be furnished by the secretary upon application.

PREMIUM LIST.

All exhibits must be in place and properly labeled by 11:30 a. m. to be entitled to compete for premiums.

Exhibitors competing must be members of this society and growers of the articles exhibited.

Fruits and flowers shown become the property of the association and may be used at the mid-day lunch.

N. B.—At the afternoon session exhibitors, in all classes, may be called upon to talk about the articles exhibited, describing them, giving methods of cultivation, etc., using the articles themselves as object lessons.

ROSES.

Collection of roses. Each variety in a separate vase, and not less than six varieties: 1st premium, $8.00; 2nd prem., $6.00; 3rd prem., $4.00.

The following named varieties of roses to be entered separately and shown in separate vases:

Prince Camille De Rohan, General Jacqueminot, Margaret Dickson, M. P. Wilder, Jules Margottin, Magna Charta, Paul Neyron, Madam Gabriel Luizet, Baroness Rothschild, Anna De Diesbach, Ulrich Brunner, John Hopper, Rosa Rugosa (pink and white), Baron de Bonstetten, Madam Plantier:

Each, 1st prem., 75 cents; 2nd prem., 50 cents; 3rd prem., 25 cents.

PEONIES.

Collection of peonies. Each variety in a separate vase, and not less than six varieties: 1st prem., $8.00; 2nd prem., $6.00; 3rd prem., $4.00.

The following named varieties of peonies to be entered separately and shown in separate vases:

Festiva Maxima, Pottsii, Rubra Superba, Marie Lemoine, Grandiflora Alba, Grandiflora Rosea, Queen Victoria, Humei, Jean D'Arc, L'Esperance: Each, 1st prem., 75 cents; 2nd prem., 50 cents; 3rd prem., 25 cents.

Seedling peony: 1st prem., $3.00; 2nd prem., $2.00; 3rd prem., $1.00.

PERENNIAL FLOWERS.

Vase of mixed perennials (not shrubs): 1st prem., $4.00; 2nd prem., $3.00; 3rd prem., $2.00; 4th prem., $1.00.

STRAWBERRIES.

One quart of each variety shown on plate:

Collection (not less than six varieties): 1st prem., $5.00; 2nd, $4.00; 3rd, $3.00.

Best five varieties: 1st prem., $3.00; 2nd, $2.00; 3rd, $1.00.

The following named varieties of strawberries:

Bederwood, Dunlap, Crescent, Splendid, Clyde, Warfield, Lovett, Enhance, Glen Mary, Haverland. Each: 1st prem., 75 cents; 2nd, 50 cents; 3rd, 25 cents.

Best named variety, not included in above list: 1st prem., $2.00; 2nd, $1.00; 3rd, 50 cents.

Seedling strawberry, originated by exhibitor: 1st prem., $3.00; 2nd, $2.00; 3rd, $1.00.

APPLES.

Seedling, originated by exhibitor, not kept in cold storage: 1st prem., $2.00; 2nd, $1.00.

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SECRETARY'S CORNER

ROCK COUNTY HORTICULTURAL SOCIETY.—This auxiliary society has headquarters at Luverne. Mr. C. E. Older is president, and N. R. Reynolds secretary, as noted from their annual report recently received. The membership numbers thirteen. Probably they make up in activity what they lack in numbers.

"TOP-WORKING INCREASES HARDINESS."—Mr. Henry Dunsmore, a member at Olivia, Minn., under date of Apr. 23rd writes: "Top-working does increase hardiness. Japanese plums on their own stock killed badly, top-worked on Cheney or Aitkin they are in perfect condition. Although the Aitkin has been thrown overboard, it stands head and shoulders above all other native as a medium to introduce Japanese blood, owing to its early maturity and also to its blooming at the same time as the Japanese."

OCCASIONAL GOOD WORDS THAT COME TO US.—"I think I get the best returns from the dollar I send for the Minneasota Horticulturist of any dollar I invest in the whole year,"

"I always feel happy when I remit this dollar."

"I deeply appreciate the work of the society."

"I want to congratulate your society on your good work."

"I like the Horticulturist well and can't drop out for any price."

THE PASSING OF A MEMBER.—Mr. Frank X. Moeser died at his residence near St. Louis Park, a suburb of Minneapolis, on Apr. 11th, 1908. Mr. Moeser had been a member of this society some fourteen years, a very regular attendant at its meetings and in earnest sympathy with its work. His special industry was the keeping of bees, and that combined with small fruit growing gave him a considerable acquaintance in the two societies fostering these arts. A more extended notice with a short sketch of his life will appear in a later issue.

CONVICTIONS FOR FRAUDULENT MARKING.—A member of the society from Ontario sends a clipping from a local paper giving the facts as to the fining of several persons who were guilty of fraudulently marking apples that had been packed for market, showing a different grade from that which the fruit actually was. In each case the packers employed were fined $5.00 each and costs, and the owner of the orchard twenty-five cents a piece for each barrel; 72 barrels, amounting in all to $18.00. Some such law might be useful to put in operation this side of the Canadian line as well.

A NATIONAL APPLE SHOW.—The Spokane (Wash.) County Horticultural Association is advertising a National Apple Show, to be held in Spokane, Dec. 7-14 next. Competition is open to the world. $1,000 in gold will be awarded to the grower of the best single apple exhibited. Other prizes aggregating $14,000 in cash, with medals, etc., will be offered for various exhibits of this fruit. The purpose of this exhibit is, to use the language of the association, "to popularize the apple as the great national fruit, by creating a greater demand for high grade fruit at prices which will leave a profit to the grower without working a

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hardship upon the customer." That seems to be a fair statement of about what everybody who has anything to sell is trying to do about all the time. Success to this apple exhibit.

EXTRA NUMBERS OF THE MAGAZINE.—It is quite often the case that members who have articles appearing in the monthly desire copies for distribution. In such cases it would be well to notify the secretary beforehand, which might be done by stating to him that when such and such an article is printed you would like to have so many copies of the magazine containing that article. This can be arranged for beforehand, and the disappointment which is often met with by our members in asking for them afterwards would be avoided. The purpose with the management is to print as many numbers of the magazine as are likely to be taken, but in this we are often in error except when we have beforehand the information referred to.

SETH KENNEY'S NEW TREE PROTECTOR.—"I have bought welded galvanized iron wire screen twenty inches high, to cut into strips twelve inches wide, each side of the twelve inch strip to be nailed to a board four inches wide and twenty inches high, to protect my sixty-four two year old Malinda seedlings from mice and rabbits. By comparison with some seedlings that grew in the shade I found the little trees needed sunshine. I trimmed the two year old trees to whips so I could put this protector over the top. Every one of these trees that I have seen is leafing out. On this four inch strip I plan to fasten two good sized wires to hold the protector up. This wire screen costs six cents for each tree. I set the board side to the southwest. Two large wires are to run into the ground eight inches to keep the protectors in an upright position.

"It is the most complete tree protector I have ever seen. In case the trees has a top it would have of course to be nailed around the trunk instead of going over the top. This wire strip, mesh three wires to one inch, twenty inches high, is just the thing. It costs $6.00 for 100 lineal feet."

STATE FAIR PREMIUM LIST.—The 1908 premium list of the Minnesota State Fair is now being distributed and will be sent upon application to any member desiring a copy by addressing C. N. Cosgrove, Sec'y, Hamline, Minn. It has been the purpose to send copies to all old exhibitors at the fair, but there are every year some new exhibitors who desire to take part, and especially in the horticultural department we earnestly solicit such. There are many fruit growers who would find it profitable to exhibit at the State Fair and would enjoy the opportunity which this gives to meet others interested in fruit growing. Secretary Latham will be glad to hear from any who purpose either as old or new exhibitors to take part in the horticultural department at the State Fair this fall. While we have a goodly number of standbys exhibiting, there is always room for more, and an examination of the premiums offered on fruits and flowers, found on page 77 of the premium list, will show that there is ample opportunity to secure premiums which will well repay the trouble to which the exhibitor is put. In making entries be sure and enter for everything that you can exhibit. Look the list over carefully and don't bring just one or two things, but enter for everything that you can show. That is the way to make the exhibit a profitable one.

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THE SUMMER MEETING PREMIUM LIST.—A radical change will be noted in the list of premiums offered for the summer meeting, confining the premiums offered for single varieties to a few of the more generally grown sorts. There are also liberal premiums for collections, and seedlings in the various classes have not been overlooked. This change has been made in the direction of simplifying the exhibit as well as making it easier for the judges.

THE FRUIT OUTLOOK IN MINNESOTA.—Communications received by the secretary from a number of points in the fruit growing sections of the state indicate a rather mixed condition as to the fruit prospect of the current year. From some sections, especially in the southeastern portion of the state, there is a heavy setting of apples and plums. Some growers report almost a total failure of apples and plums, especially in varieties of apples that bore heavily last year. Strawberries as a rule are very promising, and most raspberry and blackberry fields look well. Currants and gooseberries have lost something from the early frosts, which in many localities found them in blossom. In a general way it would appear that the small fruit crop will be a fair to good crop. Apples the state over probably less than an average crop, but with the increase in size of trees and number of orchards coming into bearing we may look for a fairly good yield. No injury is reported to fruit trees of hardy varieties.

GIDEON SEEDLINGS—SPECIAL NOTICE.—In the spring of 1900 a large number of seedling apples, raised from selected seed by the late Peter M. Gideon, were sent out to members of the society as plant premiums. Eight years having elapsed since the date of distribution many, perhaps all, of these seedlings that grew should now be in bearing. The secretary's attention was called to this particularly by one of the members, Mr. T. G. Gearty, of Robbinsdale, bringing in on June 2nd three beautiful apples of the Wealthy type, in good condition, grown from one of these seedlings. Members having received these trees will please take note, and at the earliest opportunity exhibit this fruit at the annual meeting of the society—next December if possible, and a special place will be provided at that time for this particular fruit. These trees were sent out with the understanding that when they came into bearing the results would be reported to the secretary. We are very much in hopes that something of value will come from them.

MAKE ENTRIES BEFOREHAND FOR THE SUMMER MEETING.—As will be seen by the regular notice of the summer meeting, to be found on page number 236 of this issue, all entries of fruit or flowers for that occasion must be made beforehand, to reach the secretary not later than two days before the date of the meeting. The large number of entries that are made for this meeting makes it impossible to do the clerical work required, and secure the examination of the fruit in time for use at the picnic dinner. Prospective exhibitors are urged to give this matter early attention, not waiting even for the last day noted—the earlier the better—as it gives convenient opportunity for the secretary to have everything in shape. Please enter everything that you are likely to be able to exhibit, and then if any of the exhibits are not shown no harm is done.

Entry blanks will be sent to the exhibitors of last year, and others will receive them promptly upon application to the secretary. We hope for a large list of exhibitors, to exceed that of any previous year.

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Summer Meeting, 1908, showing east half of Armory Hall.

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THE MINNESOTA HORTICULTURIST

Vol. 36 JULY, 1908. No. 7

Summer Meeting, Minnesota State Horticultural Society, 1908.

A. W. LATHAM, SEC'Y.

Nature smiled upon the annual summer gathering of the Minnesota State Horticultural Society in the usual beneficent way, and although the morning was a little threatening the skies presently cleared, and the day proved all that could be desired. A superabundance of rain had given a luxuriant growth to the shrubbery and trees on the grounds of the Experiment Station, so that with the sunshine of a bright and beautiful afternoon everything looked its best. The meeting was set in these most charming surroundings, and inside of Armory Hall the beauty of the external world was copied in the usual fine display of cut flowers arranged upon tables on four sides of the hall. With this setting and the center of the hall filled with guests at the picnic dinner, more than half of those present being ladies, the general effect was most satisfactory.

The exhibit of fruit unfortunately lacked much of being up to the usual standard. The cold and wet period preceding the meeting retarded the growth of strawberries so that very few varieties were ripe enough for exhibition, cutting the exhibit down to the smallest dimensions that it has occupied in recent years. With the two crates of berries contributed, however, one by the Jewell Nursery Company and one by the Clinton Falls Nursery Company, there were plenty so that all in attendance had an ample supply. The severe storm the day before the meeting undoubtedly contributed much towards the smallness of the display, and assisted also in keeping the flower display within comfortable limits, it being an easy matter to fill the space conveniently available for this purpose in Armory Hall as at present arranged. As the meeting and the accompanying exhibit grows, it may be necessary to make other arrangements affording larger space, but so far the gathering has been comfortably housed and accomodated in Armory Hall now for many years.

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The premium list will tell something of the story as to the exhibit, and indicate those who contributed more largely towards it. One very fine exhibit of flowers, mostly roses and carnations, of approximately seventy-five vases, was contributed by the Clinton Falls Nursery Company, but not entered in competition. There were some especially fine vases of perennial flowers shown which seemed to the writer a little better than any that have ever before been exhibited at our meeting. The possibilities in this direction would seem to warrant more attention to this feature of the display. There were a number of plates of excellent seedling strawberries. One which came after the awards had been made, from Mr. A. V. Gardner, of Hastings, received special mention on account of the size and beauty of the fruit. A special award of $3 was made for this variety, and the fruit was saved and sent to the fruit breeding farm, the seeds to be used for planting.

No exact account was made of the number that sat down to dinner, but the tables were filled in the usual way, and probably something in the neighborhood of 300 partook of the picnic lunch. Those who take part in this are always generous in their contributions to the tables, so that there is plenty to spare for all.

At two o'clock, the tables having been cleared away and seats arranged in the hall, an audience including nearly all who were there during the day occupied the room, and the interest was maintained in such a way as to hold the audience until the meeting closed at about 4:30. President Green presided in his usual happy way, and things moved along with a snap and go that gave no opportunity for weariness on the part of the audience. It was entirely an impromptu program, no one that was called upon having an opportunity for preparation.

Dean Randall of the Experiment Station not being present, Prof. C. P. Bull was invited to extend a few words of greeting on the part of the management, which he did in a very pleasant way.

Mr. Wyman Elliot, as the oldest member of the society, spoke briefly in response, referring especially to the strength of the membership, their loyalty, and the progress of the work, which is one of such profound interest to us all.

Mr. Chas. M. Loring, of Minneapolis, who has recently returned from his usual winter sojourn in California, had very many pleasant things to say of Minnesota, and in comparison with California remarked that winter in California was not half as beautiful as Minnesota in summer. He spoke briefly of the wonderful improvements in fruit culture which had been made in Minnesota since his connection

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with the society. He mentioned especially Wyman Elliot, J. S. Harris and Peter M. Gideon, who had contributed so largely to this end.

Prof. Green took this opportunity to speak of the appropriation made the night before by the executive board of this society increasing the Gideon Memorial Fund to $500, to be placed with the Board of Regents of the State University, the income from which is to be used perpetually for prizes to encourage the students of the Agricultural School in the study of horticulture.

Mrs. D. W. C. Ruff, president of the Minnesota Rose Society, was asked to talk of the flowers she had on exhibition, and spoke briefly as to some of the perennials. She took this opportunity of announcing the annual exhibit of the Rose Society, which is to be held in St. Paul June 30th. Mrs. F. H. Gibbs, the secretary of the Rose Society, called attention to the premium list of that society, and gave a general invitation to all to participate in the exhibit.

Mr. Ruff was called upon to talk about dahlias, and in response to questions he mentioned a number of varieties that are especially worthy of general cultivation, as follows: Crimson Scarlet, Century, Standard Bearer, Glorioso, Floradora, Victor Von Scheffel, Madam Von den Deale, Mrs. Roosevelt, Mrs. Winters; Grand Duc Alexis, a new variety that was for the first time grown in the United States last year; and the peony-flowered dahlias, Queen Wilhelmina and Paul Kruger.

Mr. C. S. Harrison, of York, Nebr., gave us an eloquent and all too brief address on the subject of "Beauty is Wealth," in which he enforced, as he has many times before, the value of the aesthetic in the surroundings of our home life, and the riches in this direction that we might possess if we will. Upon request he gave the names of a number of varieties of peonies that are especially desirable for general planting on account of the profusion of their bloom as well as quality, as follows: Golden Harvest, Baroness Schroeder, L'Esperance, Carl Rosenfield, Ville de Nancey, Mons Dupont, Ak-sar-ben, Duke of Wellington and Crimson Victory.

Mr. P. V. Collins spoke briefly on the subject of beautifying the home.

There was a general desire that something should be said about the roses on exhibition, and Mr. Chas. Nordine, of Lake City, in charge of the exhibit made by the Jewell Nursery Company, was called upon, but being temporarily from the hall, Mr. J. M. Underwood came forward and spoke of a number of varieties that are especially valuable for general purposes. The first rose he presented was a new one, the Frau Karl Druschke, an exceedingly beautiful white rose. Others that were named were: Ulrich Brunner, Gen. Jacqueminot, Baron De

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Bonstetten, M. P. Wilder, Margaret Dickson and Anna De Diesbach. He spoke especially of the necessity of good care during the winter in order to secure success in rose culture. First and foremost the ground must be well saturated with moisture—nothing winters as well in Minnesota in a dry soil. As an article will appear in an early number of the Horticulturist, by Mr. Chas. Nordine, describing the method of winter protection of roses at Mr. Underwood's place, space will not be here taken to recite it. Mr. Underwood spoke of the possibilities of an exhibit of roses in the Amphitheatre on the State Fair grounds, where seats could be provided for thousands of people around the arena, which would furnish space for an immense exhibit, such as might be made by this society in connection with the American Rose Society.

Mr. Eugene Secor, of Forest City, Ia., one of the visiting delegates, gave us a few words of greeting from the Iowa Society, and spoke pleasantly of the work Minnesota horticulturists are doing, working hand in hand with the sister society. Mr. Secor is no stranger with us, having attended our gatherings a number of times.

Capt. A. H. Reed, of Glencoe, got on his feet with difficulty through the persistence of President Green. It is always a pleasure to hear from this sturdy old pioneer, whose experiences go back through so many years, covering varied failure and success, but as confident as ever that all will come right yet, and Minnesota will come into its own as a successful fruit growing state.

Judge D. A. J. Baker, an octogenarian, not an active member of the association in recent years, was called upon and displayed unexpected vigor in his address to the meeting. He is not too advanced in years to entertain most progressive ideas, and emphasized this by suggesting in a forceful way the construction of a boulevard 200 ft. wide from St. Paul to Minneapolis through the Fair Grounds, thence down the Mississippi river and back to St. Paul again: a boulevard to be adorned and made beautiful, a sort of belt line to link together the park systems of the twin cities. The writer has a special interest in Mr. Baker as having become a member of the society in the same year as himself, in 1868, at a meeting held in the Historical Rooms in the basement of the first state capitol, in St. Paul. Forty years is not a long time to look back to. Then Mr. Baker was in his prime, and one of the most earnest members in attendance, and for many years he was one of the strong workers of the organization. His interest in the association still continues.

Prof. Washburn, the state entomologist, was asked to answer a number of questions pertaining to insects of the season. He gave as a prescription for lice infesting the leaves of plants a solution of

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Ivory soap, one cake to five gallons of water, in which the branches should be dipped. He spoke also of bordeaux mixture as recommended in his bulletin, but as we did not secure a full stenographic report of the matter this can only be referred to at this time. Prof. Washburn referred to the increased amount of attention in the matter of spraying trees, and repeated a statement to emphasize this that one firm in Minnesota had sold fifteen carloads of paris green this year.

At a suggestion of Mr. Thos. E. Cashman, a bouquet of flowers was made up to be sent, with appropriate greeeting by the society, to Prof. Wm. Robertson, superintendent of the Crookston station, at present in a hospital in Minneapolis for treatment.

Mr. Chas. M. Loring spoke again briefly of the value of birds to horticulture and the necessity for protection.

Mr. Clarence Wedge being called upon made a brief but earnest plea for the Plant Breeders' Auxiliary, of which he is secretary. He spoke particularly of the desirability of effort in the direction of improving our roses by growing seedlings, thereby increasing the probability of securing something both hardy and beautiful.

At the conclusion of the meeting flowers were passed around by the assistants at the meeting, and there were plenty so that every one present who cared to do so was able to carry away a nice bouquet of them. So ended as pleasant a summer picnic as the Horticultural Society has ever known. Think this over, dear friends, and if you were not with us this year plan to be another year. The attendance at these summer gatherings is steadily increasing, but accommodations willl surely be made to take care of all who may wish to come. With over 2700 members on the roll this year, we have a right to expect a large attendance at this function, though being a session for a single day only it must necessarily continue to be in a certain sense a local affair.

Premiums Awarded, Summer Meeting, 1908.

STRAWBERRIES.

Article.	Exhibitor.	Premium.	Amount.
Best Five Varieties	A. Brackett, Excelsior	Third	$1.00
Best Named Variety	B. T. Hoyt, St. Paul	Second	2.00
Seedling	A. V. Gardner, Hastings	Special	3.00
Seedling	Mrs. M. A. Rohan, Mpls.	Third	1.00
Seedling	"	Second	2.00
Best Five Varieties	H. G. Groat, Anoka	Second	2.00
Warfield	"	Third	.25
Bederwood	"	First	.75
Bederwood	Thos. Redpath, Wayzata	Second	.50
Splendid	"	First	.75
Lovett	"	First	.75
Sen. Dunlap	E. B. Miller, Mpls.	Third	.25
Best Named Variety	S. R. Spates, Wayzata	First	2.00
Bederwood	Jewell Nursery Co., Lake City	Third	.25
Clyde	"	First	.75
Aroma	"	First	.75
Seedling	J. P. Johnson, Excelsior	First	3.00

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STRAWBERRIES—Continued.

Article.	Exhibitor.	Premium.	Amount.
Warfield	H. W. Shuman, Excelsior	Second	.50
Haverland	Jewell Nursery Co.	First	.75
Enhance	"	First	.75
Dunlap	A. Brackett, Excelsior	Second	.50
Splendid	"	Second	.50
Enhance	"	Second	.50
Sen. Dunlap	Miss Mary Moeser	First	.75
Warfield	"	First	.75
Best Named Variety	E. A. Farmer, Mpls.	Third	.50

CHAS. HARALSON, Judge.

APPLES.

Article.	Exhibitor.	Premium.	Amount.
Seedling (Keep 'Till June)	Mrs. M. A. Knowles, Excelsior	First	2.00

WYMAN ELLIOT, Judge.

ROSES.

Article.	Exhibitor.	Premium.	Amount.
Collection of Roses	B. T. Hoyt, St. Paul	Second	$6.00
Gen. Jacqueminot	Mrs. D .W. C. Ruff, St. Paul	Second	.50
Gen. Jacqueminot	Thos. Redpath, Wayzata	Third	.25
Paul Neyron	"	Second	.50
Madam Plantier	"	Third	.25
Margaret Dickson	Mrs. F. H. Gibbs, St. Anthony Park	Second	.50
Anna De Diesbach	"	First	.75
John Hopper	"	First	.75
Collection	Jewell Nursery Co., Lake City	First	8.00
Prince Camille De Rohan	"	First	.75
Gen. Jacqueminot	"	First	.75
Margaret Dickson	"	First	.75
M. P. Wilder	"	First	.75
Magna Charta	"	First	.75
Paul Neyron	"	First	.75
Anna De Diesbach	"	First	.75
Ulrich Brunner	"	First	.75
John Hopper	"	Second	.50
Rosa Rugosa (pink)	"	First	.75
Rosa Rugosa (white)	"	Third	.25
Baron Bonstetten	"	First	.75
Madam Plantier	"	First	.75
Collection	The Wilcox Co., White Bear	Third	4.00
Madam Plantier	M. C. Bunnell, Newport	Second	.50
John Hopper	Peter Fournelle, White Bear	Third	.25
Rosa Rugosa (white)	"	Second	.50
Rosa Rugosa (pink)	"	Third	.25

THOS. E. CASHMAN, Judge.

PEONIES.

Article.	Exhibitor.	Premium.	Amount.
Queen Victoria	B. T. Hoyt, St. Paul	Second	$0.50
L'Esperance	"	First	.75
Festiva Maxima	Mrs. D. W. C. Ruff, St. Paul	First	.75
Festiva Maxima	Mrs. F. H. Gibbs, St. Anthony Park	Second	.50
Collection	Geo. W. Strand, Taylors Falls	Second	6.00
Collection	O. F. Brand & Son, Faribault	Third	4.00
Collection	Jewell Nursery Co., Lake City	First	8.00
Pottsii	"	First	.75
Jean D'Arc	"	First	.75
Rubra Superba	E. A. Farmer, Mpls.	First	.75
Queen Victoria	"	First	.75
Seedling No. 4	O. F. Brand & Son	Third	1.00
Seedling No. 5	"	Second	2.00
Seedling No. 8	"	First	3.00

F. J. COWLES, Judge.

PERENNIAL.

Article.	Exhibitor.	Premium.	Amount.
Vase of Mixed	Mrs. F. H. Gibbs, St. Anthony Park	Third	2.00
Vase of Mixed	Geo. W. Strand, Taylors Falls	Fourth	1.00
Vase of Mixed	Jewell Nursery Co., Lake City	First	4.00
Vase of Mixed	E. A. Farmer, Mpls.	Second	3.00

WYMAN ELLIOT, Judge.

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Seedling Orchard of John Bisbee, Madelia.

DEWAIN COOK, JEFFERS, SEEDLING COMMITTEE.

On the 19th day of Aug. 1907, at the request of Sec'y Latham, I visited the seedling apple orchard of Mr. John Bisbee, of Madelia, Minn. This orchard is just north from the railway tracks, and I believe is inside of the village corporation. It is on level prairie land and is fully exposed to the north and west winds. The rows are some ten feet apart, and the trees are two feet apart in the row, with 200 trees in each row. They had received thorough and clean cultivation. The rows were running east and west. There were thirteen rows, making twenty-six hundred trees in this seedling orchard. The rows were designated by letters, A to M, and the trees by numbers, No. 1 to No. 200.

Residence of Mr. John Bisbee, Madelia.

Beginning on the south side of this orchard were six hundred trees that were set the spring of 1905. They were two years old from seed when planted. Ninety of these trees were from seed of the Bethel. (Mr. Bisbee considers the Bethel and the Yahnke to be identical). One hundred of them are seedlings of the Malinda, and the other four hundred and ten are from various sorts, but all of them are from seed of winter varieties.

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Adjoining the above on the north are ten more rows, 2,000 trees, which were set out the spring of 1907. Eight rows of these were from seed planted the spring of 1906, and two rows were from seed planted the spring of 1905. One of these rows was all from seed of the Grimes' Golden; another row was from seed of the Dominion Winter, Wolf River, Seek no Further, Bismarck and Roxbury Russet; two other rows were set with a mixed lot of seedlings—but all were from the seed of winter varieties; two other rows were all seedlings of the Malinda and probably crossed with the Wolf River; two other rows were all seedlings of a seedling of the Bethel.

The two north rows, 400 trees, were from seed of the Northern Spy and the Rhode Island Greening, taken from apples shipped in from New York. These last 400 trees were the ones from the seed planted the spring of 1905. Mr. Bisbee has also 400 one-year-old seedling apple trees that he intends to set out in orchard the spring of 1908.

He has also taken quite a number of scions from his seedling orchard and top-worked them into bearing trees in his old orchard. He has them labeled by letter and number, so he can tell at any time just what tree in his seedling orchard any particular scion came from.

In addition to the above Mr. Bisbee has growing in his old orchard quite a number of seedling apple trees that will probably bear the season of 1908. He also has several seedling apple trees that had fruit on them at the time of my visit. They all appeared to be late fall or else winter varieties, and, of course, the fruit was not large at that time. Among them was a seedling of the Bethel, fifteen years old, with fruit nearly as large as the Wealthy and an all winter keeper. The tree is apparently as hardy as is the Virginia crab.

Mr. Bisbee's orchard, from which most of these seedlings originated, is located on a gentle southern slope and is fairly well sheltered by forest trees set out many years ago by himself. Besides growing most of the standard varieties he is fruiting many of the old eastern and southern varieties of apples, among which are the Jonathan, Baldwin, Roxbury Russet, Seek-no-Further, Dudley's Winter, Salome, Grimes' Golden, Willow Twig, Dominion Winter, Bismarck, Utter's Red, McIntosh Red, Fall Orange and Talman Sweet. He believes that some of these will prove valuable winter varieties for this section.

Aside from his village property, Mr. Bisbee owns, and with the help of his sons, farms his seven hundred acres of nearby land. He is not engaged in this experimental work for the money he expects

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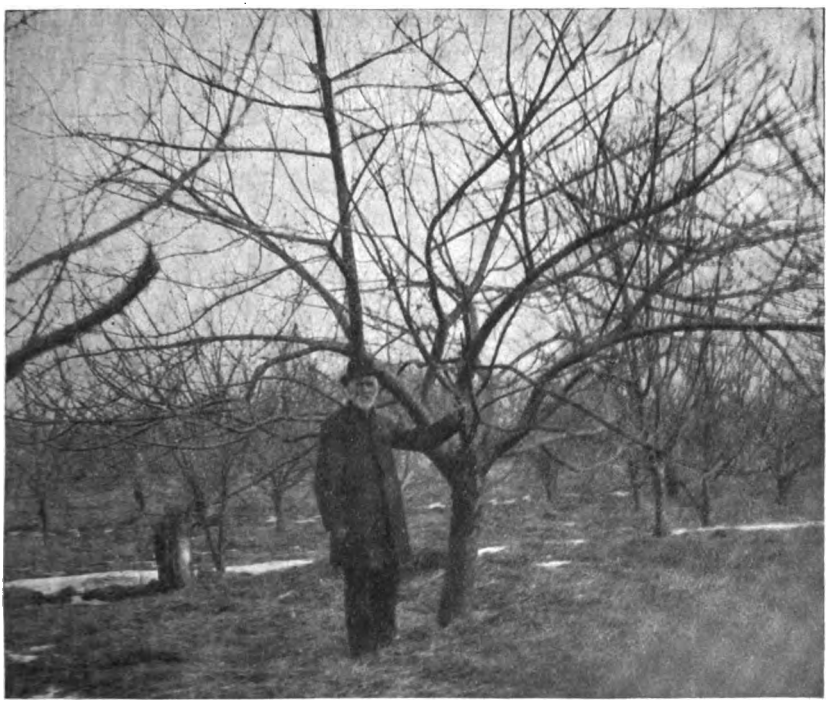
to ever get out of it but, rather, for the benefit of posterity—to build himself a monument—and for recreation. And when the time comes that he can no longer personally carry on this experimental work, he wants the officials of the state farm to have whatever material is at hand in this line that may be considered of value.

Mr. Jos. Wood, of Windom, has originated a large number of seedling plums, the most of them being Japanese hybrids. We may expect something valuable from them, this being an off season for the plum. I cannot report more fully upon them at this time. He has a fine seedling black raspberry.



Mr. John Bisbee standing in his orchard by a Hibernal apple tree.

This tree is topworked in part with the Baldwin and Fall Orange, and stands very near to Grimes' Golden, Gano, Patten, Ben Davis, Malinda and others of long keeping and choice American varieties. Two barrels of the last year's crop from these trees were sold to the State Experiment Station to be used in growing seedlings the coming spring. We have strong hopes that from the probable crosses on this tree we shall get good results.

Among the promising seedling apples that have come to my notice is one by J. B. Price, of Wilder; also one by J. F. Case, also of Wilder. The following persons whose postoffice is at Windom also have promising seedlings of fall or winter varieties: L. M. Smith, Jos. Schaffer, J. F. Grant and Barney Lochren. The Brome Sweet apple originated by J. M. Brome, of Mankato, is fully as large as the Wealthy, very sweet and an all winter keeper.

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TRIAL STATIONS
Midsummer Reports, 1908.

Central Trial Station.

PROF. S. B. GREEN, SUPT.

The midsummer report of the Experiment Station is not supposed to be presented in any special systematic way, but is for the purpose of reaching the members of our society in a direct and informal manner.

The establishment of the Fruit Breeding Farm at Zumbra Heights means that we shall do little more in the handling of fruits at St. Anthony Park, but all the work of this kind heretofore done at the latter place, and much more, will be taken care of at this station, where we have about eighty acres of good fruit land well equipped in every way. About fifteen acres have been planted here this year, and the planting now looks very well. A large amount of apple and grape seed and plum pits have also been planted and have made a good start. The soil seems to be especially favorably for the growth of seedlings, as it does not bake badly. Most of the material planted at this station was grown at St. Anthony Park.

Reports as to the progress of this station have appeared from time to time in our magazine, and it is not necessary now to go into details, but we would be very glad to have members of the horticultural society, and others who are interested, visit it and see how the work is progressing.

At the University Farm the campus has been considerably extended and improved by the grading of the grounds in front of the new main building. This has been somewhat delayed by the large amount of wet weather but is now nearing completion. Special attention is being paid to the growing of ornamental plants on this campus.

The orchards are in good condition, and there is a fair outlook for a crop of plums and apples. The seedling strawberries at University Farm are in excellent condition and promise a good crop of fruit this year.

Especial attention will this year be paid to potatoes, with which we are making a special effort to find means of combating potato diseases. We have planted out about seventy-five varieties of potatoes and eight thousand seedlings, and at present writing these are doing well.

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Glencoe Trial Station.

A. H. REED, SUPT.

The outlook at this writing, in this north section of the south part of Minnesota, is not encouraging for a fruit crop. But few of our apple trees blossomed, while the plum trees blossomed profusely but have mostly come to naught on account of severe frosts early in May.

The Compass Cherry plum, which opened its bloom a week later than the native or other varieties, seems to hold some fruit likely to mature.

The strawberry crop bids fair to be prolific.

During the past spring I have set out for trial the following trees, shrubs and plants, viz: One hundred apple trees of ten different varieties but two years old, besides 2,000 root grafts, among which varieties I have included the Yellow Transparent, Black Ben Davis, Red Beitigheimer, Aiken, Baldwin, Black Annette, Gano, Jonathan, Northern Spy, Tallman Sweet, Wolf River, Yellow Bellflower, York Imperial; 100 pear root grafts of Keifer, Flemish Beauty, Seckel and Tyson; 100 plum root grafts of different varieties, besides 100 two year old, 10 each of the following varieties: DeSoto, Forest Garden, Hawkeye, Stoddard, Wolf, Surprise, all of which are growing finely; 25 Compass cherries; 5 Keifer pears, 3 years old; 10 Worden grapes, 2 years; 100 Snyder blackberry; 100 evergreens, 10 each of arbor vitae, balsam fir, Norway spruce, white spruce, Scotch pine and white pine; 50 black walnuts, 100 Carolina poplars, 100 small elms, 200 golden willows, which I have set along a creek bank where I could not make cottonwood or box elder grow.

I have also set for trial in different quantities, catalpa, horse chestnut, weeping birch, weeping willow, flowering almonds, hydrangeas, spireas, snowballs, clematis, honeysuckle, dahlias. Nearly all are doing well, no doubt owing to the exceedingly wet May and June weather.

I have also reinforced my heretofore small strawberry patch with 1,000 Senator Dunlaps, and 500 Clydes. The Clydes seem to be the most vigorous growers, and while both varieties seem inclined to fruit freely this season—the same season set out—the Clydes have now some of the largest berries that I have ever had vines produce and will be ready for eating about the 20th of June.

I regret to report the utter failure of the twelve apple trees of different varieties budded on Pyrus baccata stock sent me in the spring of 1905 by your society for trial. Following your instructions as near as

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possible in setting, giving them what I thought to be the best location and ground—numbering the three Patten Greenings 1, 2 and 3, the three Hibernals 4, 5 and the two Charlamoffs 6, 7 and 8, the two Wealthys 9 and 10, the two Duchess 11 and 12—No. 8 of the Charlamoff died the first year after leaving out, No. 11 Duchess died the second year after setting, while No. 12 was reported "thrifty and four feet high." No. 6, of the Hibernals, died in June, 1906, while all that had survived the two first seasons failed to come forward this spring and have proven to be dead, dead, dead to my surprise.

Jeffers Trial Station.

DEWAIN COOK, SUPT.

Fruit trees, both apple and plum came through the past winter in good condition, but there will be few apples, not to exceed five per cent of a crop. They failed to bloom. We have a good many young Wealthy apple trees that bore only a few specimens each the season of 1907, and from these young trees we expected to get a fair crop this season, but not one of those trees are now bearing—not even specimens. What few apple trees have any fruit set on them are old trees, trees that have been growing here twenty years or over. Our apple trees are looking healthy—there is no blight among them—neither have we noticed anything of the disease known as the apple scab so far.

A few of our young Americana plum trees are looking sickly—they had been manured heavily. I have demonstrated to my own satisfaction that it is not the proper thing to mulch heavily the plum trees with coarse stable manure—apple trees seem to stand such treatment, but the plum trees do not.

Plums are not bearing anything to speak of. We think this condition is owing mostly to the cold and rainy weather that prevailed at the blooming period.

The red raspberries promise a fair crop, although there was considerable of winter-killing of the canes; the Kings killed to the ground —all of them.

The strawberry plants came through the winter in fine condition, although there was little or no snow on the ground most of the time. The prospect is for a large crop of this fruit.

We have put out the past spring a large number of new varieties of fruit trees and plants—this includes a fine collection of Prof. Hansen's hybrids.

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Montevideo Trial Station.

L. R. MOYER, SUPT.

The experience of last winter enforces anew the importance of having our shrubbery plantations and our perennial borders well drained and, if possible, on sloping ground. Although the winter was comparatively a mild one, such hardy shrubs as Spiraea VanHoutii, Rosa rugosa and Spiraea hypericifolia suffered severe injury on level, undrained ground. We attribute this to a winter thaw that melted the snow and formed pools of water about the shrubs, only to be changed into solid ice by the ensuing cold weather. Few shrubs can stand such a test as this—and, indeed, we have had paeonias fail under similar conditions. Good drainage is essential.

Rosa rugosa is again attacked this spring by the rose leaf rust (Phragmidium), forming bright orange-colored patches on leaf and stem. Last season many bushes of Rosa rugosa were killed to the ground by this rust. This fungous disease is common on the wild roses in this neighborhood, and seems to have found a congenial host in Rosa rugosa.

Callicarpa purpurea has survived several winters but kills back to the ground. It springs up vigorously again in the spring but does not flower.

Prunus triloba seems to be hardy here and has begun to produce flowers. It ought to be grown on its own roots. When grafted on plum, the sprouts from the root are apt to spring up and give trouble.

Paeonia rubra is in bloom at this writing and seems to be the earliest of paeonias. It is a fine variety.

Chrysanthemum coccineum, formerly called Pyrethrum roseum, is now in bloom and in its many varieties is one of the most desirable plants for the hardy border on the loamy land of western Minnesota. How well it would do on heavy, dark prairie land we do not know.

Dictamnus albus, often called Dictamnus fraxinella from its leaves, which resemble those of the green ash, is well loaded with buds and seems likely to be hardy here.

Papaver orientale is just now a striking object, with its flaming red flowers. It seems to be hardy, but our short experience leads us to believe that its sister plant, Papaver nudicaule, is tender or at least not adapted to our soil.

A very satisfactory herbaceous border has been established on the north side of a woven wire fence on which Clematis Virginiana and Virginia creeper have been allowed to grow. Here native plants from

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the woods thrive. Among these are ferns, Viola Canadensis, Viola palustris and Phlox divaricata. Such a border needs little attention, only to see that the coarse weeds are removed.

There is a prospect of only a moderate crop of apples and but a light crop of plums. Currants, gooseberries and raspberriees promise the usual crop.

The Aitkin plum must have been a Japanese variety instead of a descendant from Prunus nigra, as we have been led to believe. It seems to be tender here. Prunus nigra grows along our northern border and is hardy at Lake Winnipeg.

Owatonna Trial Station.

THOS. E. CASHMAN, SUPT.

June 15. The trees at the Owatonna Trial Station came through the winter without injury to either top or root. The weather last winter was the most favorable that we have experienced in southern Minnesota for a number of years for all kinds of deciduous trees. The only things that seemed to suffer were raspberries and strawberry plants that were not properly covered.

The apple crop will be very light in this section of the country this year. There will be less than half a crop at the Owatonna Trial Station. Some varieties are bearing quite full, while a great many have little or no fruit. Several new varieties are showing fruit this year for the first time, and we hope to be able to report good results from them.

The old routine of spraying, cultivating and hoeing and keeping the ground in good condition has been followed up this season as usual. The twelve trees budded on Pyrus baccata sent us by the Minnesota Experiment Station are all doing nicely.

Sauk Rapids Trial Station.

MRS. JENNIE STAGER, SUPT.

June 13. At this, and at other places in this vicinity, a great many perennials and hardy shrubs, as snowballs, syringas, hydrangeas and so forth, died at the tops. Most of them however are growing a new top. On account of continual rain storms, most vegetables have been planted the second and third times. Cut worms innumerable have also got in their work.

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Late frosts killed off most of tthe apple blooms, but plums are bearing quite a crop. Strawberries, especially on sloping ground, are heavily loaded. It also looks at present as though raspberries would bear well, and the Snyder blackberries are covered with bloom.

As for flowers, lilies and paeonies are loaded with buds, but small plants and transplanted annuals, as also those coming from seed sown in the ground, are cut off by the wholesale by the cut worms, and there seems to be no remedy. Currants and gooseberries will have very little fruit—and just at present we are thinking of putting up our winter stoves unless some pleasant weather intervenes.

West Concord Trial Station.

FRED COWLES, SUPT.

The season seems to be somewhat similar to last season in regard to cool weather and rain, and the fruit prospects are about the same as last year. The forepart of the season was favorable for planting, with plenty of rain and cool weather, and the heavy rains a little later hindered our work somewhat, but we are ahead of the weeds at this writing, and everything is looking fine.

Plums will be a poor crop. My Surprise were full of bloom but do not seem to be setting much fruit. I am afraid that the Surprise is a failure, on my soil at least. Other varieties are not setting much fruit.

The apple crop in this vicinity will be very light.

Strawberries are setting a good crop. They will be somewhat later than usual but not so late as last year. Raspberries killed some this winter. The Older was injured more than I ever saw it, but it will bear some fruit, though not so much as if it had been covered.

King and Ironclad were covered and look fine. Blackberries are full of bloom and promise a full crop. I notice those that were not covered are blossoming as well as those that were covered.

Currants and gooseberries are about one-half crop.

After visiting Mr. Patten's experimental orchard and seeing his display of fruit at the winter meeting, I am testing a number of his seedlings and will report on them from time to time.

The spirae has been full of bloom again this season, and we never saw the snowballs so nice and large as this year. Peonies are again commencing to open and promise a beautiful display.

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Wisconsin Trial Orchards.

LE ROY CADY, ST. ANTHONY PARK.

The Wisconsin State Horticultural Society maintains six orchards, located respectively at Wausau, Medford, Eagle River, Poplar, Maple and Barron. These vary in size from about two acres at Barron to ten acres at Wausau. The object of these orchards is to test varieties and methods of handling apples, plums and cherries; no other fruits are planted. The idea is that these orchards will be a stimulus to people in the vicinity to plant more trees and only those kinds that do well in each locality.

A portion of the Medford orchard.

The method of establishing these orchards is as follows: A committee appointed by the society visits a district in which it seems desirable to have an orchard and selects a suitable site. A contract is then made with the owner of the land for the lease of as much land as is needed. This contract binds the owner for a certain number of years, or until the orchard comes nicely into bearing, when it may be turned over to the owner of the land. He receives five dollars an acre per year rent for his land.

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The owner of the land may do the work in the orchard, for which he receives a reasonable compensation, if he so desires and the orchard committee is willing, or outside help may be secured. In either case the cultivation, pruning, care, etc., is done under the direction of the orchard committee, of which the secretary of the society is executive agent, and upon him most of the management devolves.

It was my good fortune to visit five of these orchards with the orchard committee early in August. This committee consisted of, Dr. Loope, R. J. Coe and D. E. Bingham, with Mr. Cranfield, secretary of the society.

Barron. The first orchard visited was one of the newest, located about one mile north of Barron. It comprises about two acres of almost level land, sloping slightly to the east and north. The soil is good loam underlaid with gravel. Fine crops of hay and clover and peas are grown here. Grain is poor. This was originally hardwood land having a few pine.

Part of this orchard was planted in the spring of 1906 and part this spring. Last year's trees are doing very well, but out of fifty-six trees set this spring about thirty-six are dead. They were secured in very poor condition and were very poor trees, although selected trees were ordered.

This orchard is not protected in any way except with rabbit protectors. No windbreaks have been planted about any of these trial orchards.

In all these newer orchards the trees are planted about 24x32 feet. Apple trees are doing well here, except those noted, and the plums are doing exceptionally well; in fact the plum grows wild here in large quantities.

Poplar. From Barron we drove to Cameron, passing a number of fine cranberry marshes but did not have time to see them. From there we went by the Omaha to South Range and visited the Douglas county poor farm to see the effect of some tile draining on garden and farm land. No very marked results were observed. A young trial orchard here conducted by the Wisconsin Experiment Station did not seem very promising, apparently on account of wet feet. The night was spent in Superior, and early the next morning we took the Northern Pacific for Poplar.

There are from ten to fifteen acres in this orchard, five acres having been planted in 1905, five in 1906 and some more this year, I think. The soil here is very peculiar. The surface soil after a thorough cultivation is mellow, but the subsoil is rather hard to describe.

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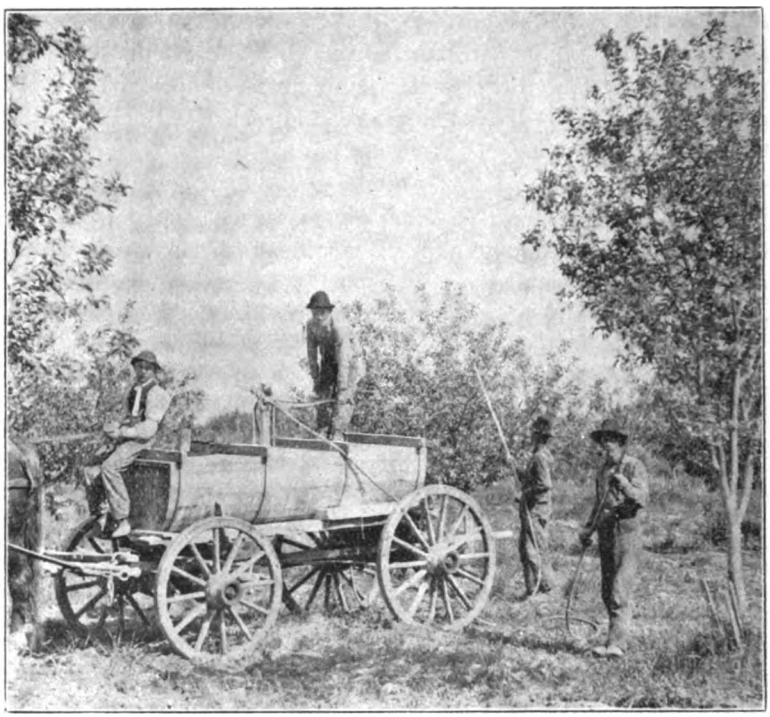
Secretary Cranfield says that at one foot below the surface it might be burned for bricks, and at two feet it could be used without burning. I have a small sample taken just a little below the surface that seems to me to be about as hard as a rock. This subsoil holds a great deal of water, in fact it is the policy to ridge the land along the orchard rows, thus getting them out of the water to some extent. A large part of the trees in this orchard are apparently doing well. Cherries are not doing much, in fact most of them have died out.

This is one of the orchards that it is desired to tile drain, and it certainly seemed to me it was needed.



Spraying outfit used in the Wausau orchard.

A small tract of land between the orchard and the depot has been rented from the company and planted as a park, thus giving a fine view of the orchard to those going through on the train.

Maple. Four miles east of Poplar and 247 feet higher is another tract of three acres used as an orchard. This is right in the town of Maple—consisting of some dozen buildings.

The trees in this orchard were set this spring, and this orchard,

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both from its location and soil, seemed the most promising of any yet visited. Practically all the trees in the orchard were in good shape. The land was in good condition as regards tilth and was good orchard soil.

Medford. From Maple we took the train to Ashland, where we had supper, and later took the train for Medford, which was reached about midnight. The orchard here consisted of some three acres two miles from town. The soil is rather medium heavy clay and stony. Part of this orchard is low and probably should be drained for best results.

Wausau. Wausau is the oldest and most important of the orchards. It is located about three miles from Wausau, which is a good sized and progressive town in a good Wisconsin farming district; in fact about the only real good country to look at that I saw after leaving Osceola. The crop from this orchard at that time was estimated to be about 1,000 bushels.

Two years ago canker threatened to destroy it all, but by a good thorough scraping of the affected parts and treatment with a solution of corrosive sublimate and then painting with white lead, the orchard has been saved. When I saw it, it was apparently in good condition.

Among the best varieties in this orchard were Duchess, Hibernal, Patten and Okabena. These seemed also to do about the best in all. Plums were not doing very well, but this was thought to be due to lack of care.

Cherries did not do well in any of the orchards and seemed hardly worth bothering about.

Taking it all together I think a good work is being done in Wisconsin, although, it seems to me, it is work that the State Experiment Station should have control of rather than the society.

In regard to Norway poplar—I know there is much talk about it nowadays, and there is much of it in the papers, and the planting of it is liable to be overdone. This tree so closely resembles the common cottonwood in general appearance that it is impossible, or almost so, to tell them apart. I regard it as nothing more than a cottonwood which has unusual vigor of growth. It is a desirable tree and should be planted in favorable locations for use as lumber. It is not well adapted to dry lands but will grow on sandy lands, providing the water table is near the surface of the ground.

On account of Norway poplar being identical in appearance with the cottonwood, unscrupulous dealers may substitute for it without much danger of detection.—S. B. G.

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Dress as an Expression.

MRS. MARGARET J. BLAIR, DEPARTMENT OF DOMESTIC ARTS, MINN. SCHOOL OF AGRICULTURE

Suitable wearing apparel is beautiful wearing apparel. A woman may be more attractively gowned in gingham than in silken garments. The secret of attraction in the uniform of the hospital nurse is its absolute cleanliness and trimness, its entire suitability, and for this cleanliness and trimness we have to thank the germ theory. May the future send us such a germ campaign in our kitchens as will make soiled or dark garments an offense calling for a fine. And this may not be so far distant as we think. Our food chemists already tell us that it is almost as important to observe the laws of perfect cleanliness in our kitchens as in the hospital or sick-room, and this discovery by the food chemists ought to suggest to housewives a uniform of the kitchen—dress suited to the various occupations of the home. Not that the kitchen gowns and aprons need all be alike, but that they must be the product of a uniform effort, the effort to make drudgery beautiful by making it clean and inviting. The washing of dishes or the making of a pie may be as becoming to a maid or matron as that ancient employment of beauty, the embroidery frame.

Like the ideal home, the garments of the kitchen—and of housework generally—must be simple, built upon straight and restful lines, easily laundered and without superfluous frills. They must be light, easy to wear, easy to work in and—let me emphasize this—becoming. Every woman has the right to look beautiful. Every woman is beautiful in somebody's eyes if she is so fortunate as to be a home-keeper. She is a beautiful wife, a beautiful mother, a beautiful grandmother or, may be, only a beautiful neighbor.

Sometimes it is the very beauty and unselfishness of a woman's nature that makes her think of herself last in providing the clothing for the household. But let me urge you to make the children's clothing plainer—the plainer it is the prettier it is apt to be anyhow—to put plain denim covers on the sofa pillows, to let simplicity govern the household, but to keep a little time to expend upon your own house dresses. Many of the undergarments for the little ones can just as well be bought ready made, but the house-mother should wear something in which there is greater distinction than is to be found in the ready-made wash dresses. A 99-cent wrapper is a pathetic thing, not alone on account of the starvation wages at which it was made but on account of the wretched figure it imparts to its unfortunate wearer.

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Still, expensive clothes are not always the most beautiful. A dollar will often cover the expense of a very attractive house frock if it is made neatly at home. It may be more becoming than the expensive but atrocious purple costume I saw recently on a lady of very warm complexion, who looked exactly as if she were made of some molten material which had been poured into the garment and left to harden.

An upholstered woman is a most unpleasant sight, especially if she is upholstered in an unbecoming color. The woman I saw in purple had good features and a kindly expression, but the battle royal going on between her face and the color of her dress completely obscured such pleasing qualities as her features possessed. The same lady in soft grays, echoing the shade of her hair, would have been most grateful to the eye. As it happened, the very distinction of her bearing made the bad taste of the costume she wore only the more apparent.

Mrs. Margaret J. Blair.

It is common enough belief, but one of which we cannot too quickly rid ourselves, that the beauty of a costume does not depend upon elaboration or expense but upon good taste and its harmony with the surroundings and the needs of the individual. Beauty in personal appearance is often destroyed by the lack of knowledge how *not* to spoil the gift of nature. In selecting the material for her gown a woman will do well to keep in mind one simple rule, never allow her dress to be her rival. Nor must she, unless her features are very regular and her complexion clear, permit herself to become a slave to fashion, either in cut or color. Fashion is all very well in its way, appealing to the love of change, which is a feminine characteristic, but so soon as a woman submits herself without reserve to its dictates she risks losing something of her individuality in personal appearance.

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For the plain woman there are deep pitfalls in a blind following of fashion. She must know as well what suits her type as what foods suit her husband's digestion or what kind of books are best for the children to read, else her appearance will be out of harmony and she will look plainer than she need. By the same token the gift of good looks is often lost through mere carelessness.

And I ask you: What woman does not like to look well? If she is indifferent to her own appearance, there is something strangely lacking in her make-up, and her character will be found to have lost the attractive curves that found friends and kept them. The woman who is willing to exhibit angles in her figure is not apt to hide them in her character, and her speech is likely to show some sharp edges. Believe me, a pretty gown will do more to command obedience from rebellious boys than will a half hour's shrewish talk; and the girl whose mother is attractively gowned will feel she has a companion as well as a mother, and you know how much that means to a girl.

It is only when dress becomes a mere matter of display that it loses its charm and the sympathy of those who would still, in our practical world, keep alive all that means poetry, grace and sentiment.

There are few women, even beautiful ones, so absolutely complete and perfect in themselves as to be at home in every color. Only those colors that clear the skin should be chosen. Their effect upon the skin may be determined easily by holding the material near the face and noting the effect. You will be surprised, if you have never tried this, to see how much clearer the skin will look with some colors for a background than with others. Complexion is in reality largely a matter of what one wears. And it is very odd, but true, that persons having apparently the same complexion, their skins tinted precisely alike, very often do not look well in the same colors. But investigation of this will probably show that the secret of the difference lies in the color of the eyes, the shading of the hair or, possibly, a mere matter of expression. Some colors, as scarlet and the pinks, have an affinity for movement and are prettiest on quick-moving figures and near animated faces. The forest greens, for a very natural reason, are most becoming to stately or slow-moving figures.

While we are upon the subject of color, let me emphasize the influence of distance and atmosphere upon it. I have seen the brilliant scarlet jackets and caps of young women make a very charming appearance on the wide green of a golf course, but when the sun-burned, wind-tossed maidens came near the spectators' gallery there was disillusionment. In a few exceptional cases, the scarlet jackets were be-

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coming, but to the majority of girls they were most unkind, making the complexion muddy and increasing the apparent confusion in costume—for red, you know, is a riotous color. Still the same girls might look charming in the same red jackets if the strident color were worn over a soft white gown, the red carefully separated from the face by the white material. So also colors which are not harmonious when placed side by side can be greatly modified by dividing them with lines of black or white, gold or silver. These four colors have the power of separating tones so completely that each color appears of the same hue as if seen by itself.

A color seen against black is decreased in hue, but if placed upon white it is increased, because white has great power of reflecting light, and the reflected light mingling with the rays of the color makes them appear brighter. Black has the power of absorbing light, and it absorbs some of the light from the color placed upon it, rendering it less brilliant.

Care should be taken not only in selecting the color of the dress but also in choosing the material. Usually the lighter colors and delicate tints are most pleasing in the thin, light-weight materials. They are also more becoming and more suitable for house wear than the darker and more neutral tints, which are better in heavy cloths and in better taste for street wear.

In selecting the color for the street dress, it will be found that no mistake can be made if the shade of the hair or the eyes is matched. Even before the skin, the color of the eyes and hair should be consulted. You will find that Nature does not often go astray in the matter of harmony, and if she has chosen a certain shade of brown in hair and eyes to go with your skin, you will do well to take advantage of the hint so kindly furnished. This does not mean that with brown hair any sort of brown material will look well. Red-brown hair calls for a red-brown frock, while a golden or chestnut brown demands shades of the golden brown in dress material. With black hair and blue or gray eyes, gray will usually be found pleasing. A pink flush on the cheeks or overspreading the skin will be most agreeably answered by a bit of pink about the neck of the gown.

There are many women who have lived all their lives within reach of the most becoming colors and yet who have never had their eyes opened to this secret of beauty in dress.

We must not forget that underlying all this there is a serious purpose, a gospel of truth. A beautiful song is the song that tells us something, and the artist is the singer who by his understanding and sincer-

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ity is able to give us the message the song holds for us. The melody and the quality of tone in which the message is couched correspond to the garments in which our personalities are appareled.

In his great book, "The Simple Life," the Rev. Charles Wagner has spoken of this. He says: "We must not fall into the gross error of confounding true beauty with that which has only the name. The beauty and poetry of existence lie in the understanding we have of it.

"Our home, our table, our dress should be the interpreters of intentions. That these intentions be so expressed, it is first necessary to have them, and he who possesses them makes them evident through the simplest means. One need not be rich to give grace and charm to his habit and habitation; it suffices to have good taste and good will. We come here to a point very important to everybody, but perhaps of more interest to women than to men.

"Those who would have women conceal themselves in coarse garments of the shapeless uniformity of bags, violate nature in her very heart and misunderstand completely the spirit of things. If dress were only a precaution to shelter us from the cold or rain, a piece of sacking or the skin of a beast would answer. But it is vastly more than this. Man puts himself entire into all that he does; he transforms into types the things that serve him. The dress is not simply a covering; it is a symbol. * * *

"A woman's toilette, too, has something to say to us. The more meaning there is in it, the greater its worth. To be truly beautiful it must tell us of beautiful things, things personal and veritable. * * * Ultra-fashionable dress, which completely masks feminine personality under designs of mere convention, despoils it of its principal attraction. From this abuse it comes about that many things which women admire do as much wrong to their beauty as to the purses of their husbands and fathers. What would you say of a young girl who expressed her thoughts in terms very choice indeed but taken word for word from a phrase-book? What charm could you find in this borrowed language? The effect of toilettes, well designed in themselves, but seen again and again on all women indiscriminately, is precisely the same."

Just here Wagner himself quotes from another French author: "Nature has given to the fingers of woman a charming art, which she knows by instinct, and which is peculiarly her own—as silk to the worm and lace-work to the swift and subtle spider. She is the poet, the interpreter of her own grace and ingenuousness, the spinner of the mystery in which her wish to please arrays itself. All the talent she expends in her effort to equal man in the other arts is never worth the spirit and conception wrought out through a bit of stuff in her skillful hands."

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Growing Seedling Strawberries.

H. G. GROAT, ANOKA.

I have been growing berries for market twenty-five years, and have been growing seedling strawberries on a small scale for about eight years. At first I depended on chance seedlings and met with many disappointments. I then commenced planting seed from selected berries and have met with better success.

Plant seed of selected berries from plants that show the most perfect fruit, set away from other plants, only the kind you wish to cross them with. Let the berries get over-ripe, crush with sand to separate the seeds and plant in good, rich soil about one-fourth inch deep in some sheltered place. Give partial shade and keep the ground moist until the plants come up and when they are one-half inch high transplant to give room. When the plants are nearly grown, transplant to rows. Let each plant make a few plants—not many, or they will exhaust the parent plant. They should produce fruit the second year, but some do not until the third year. Let them fruit for three years, as some seedlings show a marked improvement in fruit up to the third year. Now if you get a good berry all right, but if they are no better in some ways than the varieties we now have, plow them under and try again.

I have planted seed of all the berries I had at hand, with many crosses: Corsican and Clyde for size; Crescent, Bederwood and Warfield for productiveness; Brandywine and Dunlap for quality. Out of many one hundred dozens I have five or six seedlings that are very good, but it will take a year or two more to determine their real value.

I have a seedling of Warfield crossed with Brandywine. It is the best of the lot on account of its quality. It is of good size, dark all the way through, quite firm when first picked and of fine quality. Another seedling is Crescent crossed with Bederwood. It is in matted row—most too thick for best results. It produced the past season at the rate of 12,200 quarts per acre, but it lacks quality. On Aug. 15th I found a fine specimen of Senator Dunlap strawberry on a newly set plant, and it was just right to plant. I planted it and have about twenty plants now about one-half grown. This berry should be straight Dunlap stock, as there were no other berries in blossom at that late date.

On the same day I planted seed of Cuthbert, Gregg and Columbian raspberry, Red Cross, Cherry and White Grape currant, Downing gooseberry, Lucrecia dewberry and Ancient Briton blackberry. Grow

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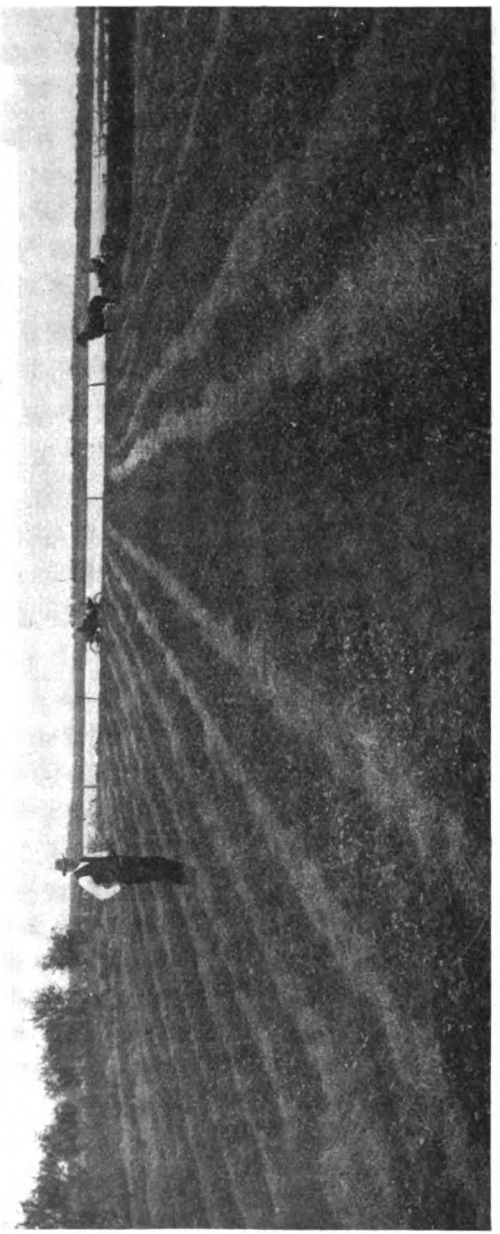

An ideal strawberry field in full bloom. On the place of Mr. H. G. Groat, at Anoka.

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seedlings of all our fruits, and especially of the seedling strawberries, for it is the queen of berries, the poor man's berry. I would like to see a strawberry patch in every garden throughout our state.

Mr. Gordon: When do your plants grow, the same season you plant the seed?

Mr. Groat: Yes, but they do not come up evenly. I mix them with sand and that spreads the seed.

Mr. Gordon: Do you transplant them the same season?

Mr. Groat: Yes, they will make runners the first season if you plant them early enough.

Mr. C. S. Harrison (Neb.): I want to say a word in regard to something I do not see on the program. There is a grand empire open for the creating of new flowers. I have been engaged in the development of new flowers for several years. Just take the matter of the development of the phlox. You take the seed of the phlox, and you plant it and see what wonderful results you will get. I planted the seed one year, and I got twenty new varieties that were equal to the best importations. Any man, woman or child can originate new varieties as easily as they can grow potatoes. So with the columbine—the columbine has remarkable possibilities. There is an intense blue, a sky blue—why, you can get almost any colors! The same way with the phlox; you can get almost any variety you please by careful selection and hybridizing. Take the poeny: Mr. Mansfield has the finest I ever saw, and he has them hemmed in by a windbreak, and in the midst he has his bees, and they will go from one thing to another. He plants his seeds, and it is really wonderful what he is securing. I want you to feel that there is something besides fruit to be thought of; there are these flowers to be developed. (Applause.)

Early Forestry Plantings at St. John's University, Collegeville, Minn.

REV. ADRIAN SCHMIDT, MINNEAPOLIS.

It is now eleven years since my superiors sent me to Minneapolis, separating me from the work I had so much at heart, and so I am at present a quasi stranger even in St. John's. Father John Katzner kept it up after my departure, I only asking sometimes how things are going on. But after all what could I say about my planting? It was only the work of a tyro, who tried and failed, and tried again, accompanied by the laughter of others, until I found the way best suited for our part of the northwest.

The beginning was made in 1890, when I planted my first evergreens (spruce) from imported stock, selecting a sandy, stony tract. Most of them died, but I must have something green, and I tried again with red cedar which I dug in the fall and planted some in fall and

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others in spring, trying to have enough earth on them to assure growth. They were a success; most of them were trees of five feet. After that I would take only little plants. From Sturgeon Bay I ordered Colorado spruce; selected a southside hill and failed—should have known better; also some hundreds of hemlock—again a failure, planted all in fall; Austrian pine—they grew and prosper now. Next came beech and European larch, of each, 2,000. Beech—miserable plants with almost no roots, so also the larch plants—died, leaving only fourteen larch plants alive, now over twenty feet high. It was a fine loam bottom and protected, but the heat may have killed them. Into the same ground we planted red pine, and you will have seen the splendid result, scarcely any dying. If I could be at home I would plant more white pine, as they did well; also Scotch pine, which grow vigorously and will surely pay for the work.

Seeing that it is a questionable proceeding to have plants imported, I commenced to sow seeds (spruce) imported from Bohemia, hardy mountain spruce and Colorado blue, which grew beautifully, so also spruce seed from Bavaria, (a variety bearing very long cones). Of the latter kind I have a considerable number, very strong growers, but they suffered badly towards the end of winter from frost. Now they are over this, and since then they shoot up, most of them making over two feet in a spring. Of the aforementioned Bohemia spruce and Colorado I cannot say much, all the plants, so to speak, having been maltreated and neglected during my absence on a mission, dying in their beds, about 60,000 at the time, quite a loss.

Since the time I left St. John's, they have only planted red pine, (German Kiefer), and they do well. In beds we have some few hundreds of white pine. If I ever should come home to stay, different kinds of oak and hard maple would be put on the list, since these trees are needed badly, having been burned down, and we need hardwood. Next year if I only can find a place I shall have beech seed (German Blutbuche) in the ground; they must be hardy enough. I will acclimatise the tree; it is a beauty, and I must have it. All my relations are foresters in different parts of Germany, and so the seeds from different localities will show which is the hardiest. If we succeed, we will send an account to you.

The best time to plant coniferous evergreens, i. e. pines, spruces, etc., is just as the new growth shows a little sign of starting in the spring. This is, as a rule, about the first of May, but they can be planted even after growth has started an inch or two, providing the work is carefully done.—S. B. G.

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Forest Planting on the Northern Prairies.

BUREAU OF FOREST SERVICE.

Nowhere in the United States, perhaps, is the need of forest planting greater than on the prairies of Minnesota and the Dakotas, and nowhere is it more profitable for commercial returns. Protection from wind and storm is essential for the well-being of the family, the stock and the orchard. Indeed, in many cases it is the presence and shelter of belts of trees about the farm buildings, with their continuous supplies of fuel, that mark the distinction between the comfortable home and the one wherein comfort is lacking. Owners estimate the value of good groves, on an average, at $1,000 an acre, on the basis that their property, if placed upon the market, would be increased to that extent by the trees. Bankers and land agents take special note of thrifty groves, for they have learned that buyers are ready to pay for the protection and comfort of a grove. The effectiveness of the grove as a windbreak is determined largely by the number and kinds of trees planted and their relative positions.

When planting for direct profit is contemplated, inquiry becomes necessary into (1) the market, (2) the cost of production and (3) the species planted. As a result of the absence of natural supplies, posts, poles and fuel wood are shipped into this region from northern Minnesota at a freight rate of ten cents a hundredweight, or about $3.50 a cord. This, with the original selling price and the dealer's profit, brings the local selling price up to from $7 to $11 a cord.

The value of the land is usually the largest item in the cost of producing a wood crop. Although the best soil will produce timber most rapidly, yet rough, sandy or occasionally overflowed situations can also usually be utilized. In selecting a tree for commercial planting, its hardiness in the climate and situation is most important. After that, rapidity of growth and the quality of the wood, especially its suitability to serve local demands, are considered.

Cottonwood and white willow are profitable on the deep, porous soils of the river valleys. Seven cottonwood groves yielded in lumber and fuel an average annual net return per acre of $10.67, while eight groves of white willow gave products of posts and fuel equal to an average annual net return of $24 per acre. European larch and Scotch pine produced, respectively, an annual net return per acre of $11.93 and $13.35 when planted on upland, and would do even better in the river valleys. White spruce, Norway spruce, and western yellow pine are also adapted for planting for windbreak purposes. In species for

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park, lawn and roadside planting, symmetry and gracefulness are important considerations.

Cuttings are usually used in establishing a plantation of willow or cottonwood. The expense is little or nothing. Seedlings of broadleaf trees are easily procured. Unfortunately, coniferous stock is expensive. Considering, however, their high protective value in the winter, and their ability to resist drought, heat, cold, storm and snow pressure, and the quality of the wood produced, conifers have proved more desirable for permanent plantations than broadleafs.

The foregoing facts and other information, and directions about planting, are contained in a publication entitled "Forest Planting on the Northern Prairies," recently issued by the Forest Service. This publication can be had free upon application to the Forester at Washington, D. C.

Home Study for Women.

MISS MARGARET J. EVANS, NORTHFIELD.

The topic on the program is certainly one that has been in the hearts and minds of men and women for a long time. When Dr. Thorold was talking to some school children at one time about geography, he asked the question, "Which was the largest island before Australia was discovered?" As they could not give the right answer he said, "Australia, of course. It was there all the time." The need of which I speak this afternoon "was there all the time," but not everybody was conscious of it. I find that there was always a necessity for home study for home women. The women have always had, as men have had, a hunger for soul and mind satisfaction. George McDonald has said, "There never has been written yet a history of hunger, from the primary hunger of the body up the great ascent to the hunger and thirst after righteousness." If that history is ever written there will be a chapter devoted to the unsatisfied hunger of the mind. The great mass of women were until recently shut out from this satisfaction of the mind. They were hardly aware of it themselves, but through all the centuries women have had this mind hunger.

When Mr. Kipling, the father of the author and poet, was in Egypt a rajah brought to him a casket of gems and said, "Will you pick out a gem that I may give to my unwilling bride to win her?" Mr. Kipling sought among the larger jewels until he found a magnificent stone, then he took it out and said, "Give her this; there is no woman in the world that can withstand such a gift as that." The

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rajah replied, "No! Such gems are not for women!" The average woman must still feel that the centuries are denying to her this great satisfaction for which she longs; the average woman of the home has still this unsatisfied longing for something more than she has. She feels as the woman feels who said to me not long ago, "The only thing in life that I regret is my mental starvation; I have no intellectual impulse from without. My husband is an intellectual man. He associates with business men and speaks to them of things as they happen in the world, but when he comes home he likes to talk of commonplace things, which I have been thinking of all day, and so I have no intellectual stimulus." There is this need for a stimulus from without.

A woman who had traveled in India said in my hearing that she had visited a cultured Indian gentleman in his home. He had a fine home, beautiful surroundings, a fine library and all the evidences of culture, and she found his conversation to be that of a cultured and educated man. When she asked to see his wife she was shown into a miserable habitation, the usual home of the women of India, and found the wife a child to all appearances. She saw in one part of the room a top and an engine and some other toys. The lady said, "Have you a child?" "No," the wife replied, "These are the toys with which my husband amuses himself when he comes to talk with me!" There was a total cleavage between the man's domestic life and the woman's domestic life, and there was a total cleavage between the woman's mind and the husband's mind—there was absolutely no mind intercourse. That woman had need of intellectual development. President Elliot says, "There are some men and women who seem to grow emptier and thinner all the time, so that as time goes on they seem to have such a mental vacum you really wonder if they can ever have immortality, they seem to have so little left about them except body!"

There are people in need of new mental stimulus and thought and study. We all know the monotony of life. If there is no impulse from without the mind becomes dwarfed. We know that dwelling upon one thought, be it ever so beautiful, makes a person abnormal and unfit to associate with others and unfit for the duties of normal life. There is a beauty in the ordinary setting of the home life, but that needs to be added to if the home is to be conducted right. We are not so contented as the woman Kate Douglas Wiggins speaks of. This heroine said, "There seems to be no way in which we could enjoy ourselves better. We wash on Monday, we iron on Tuesday, we bake on Wednesday and go to meeting on Sunday, and it doesn't seem

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as though any one could ask for more!" Now she was quite contented, but for health's sake, for humanity's sake something more is needed in the woman's life than to follow the daily duties that fall to the lot of the housewife. There should be an avocation something outside of the regular duty or trend of thought. For the average woman who has her home duties this avocation may properly be found in some improving study, some beneficial line of reading and thought which will take her out of herself.

What is the aim of this study and reading? It is very obvious that the aim cannot be scholarly attainment in science or mathematics or anything of that kind. The attainments of those who are in our colleges and universities cannot be attained by the average housewife. For the average woman, even if she cannot have a library in her home, there is a large field of literature, travel, history and similar studies which she may enjoy. She has a great chance to attain in these studies that which must be her aim, not scholarly attainment but an improvement of the mind, the cultivation of intelligence, the enlargement day by day of mental grasp, of mental capacity. Culture in its broadest sense must be the aim of home study. Culture does not depend on study, it does not depend on wealth, influence or education, upon society or the influence of home surroundings; culture depends only on the desire of the mind and the purpose of the individual.

Now the aim of this home study, as is the aim of all education, is to draw out the mind. You cannot say it too often that education is the opening out of the mind, the drawing out of the mind, its powers and activity. The thought of coming into intercourse with master minds, the purpose to do this by every day study is one of the great things that may come to us today; and this education is within the reach of every man and every woman, without reference to the school. Such every day study may give a better education than any university can give, and any woman if she will may know as much along these lines as any learned university scholar.

How should we achieve this great result? It is said that "one man's meat is another man's poison," and what nourishes one person would not nourish another person. In any plan of study there must be thought and effort, and some plan should be followed by every person. Something helpful to one person might be detrimental to another person. I learned of a Norwegian farmer who went to the bank to get some money. The cashier offered him a clearing house certificate, but he said that would not do, he wanted the money. The cashier told him it was just the same as money. The farmer said, "Vall, Aye

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go home, mein bapee he cry for milk, en' Aye gif heem a milk teeket; dat bane yust as goot!" (Laughter.) We may think it is just the same in regard to study. The purpose of this home study is to kindle the soul; the reading must be an act of ambition, an accomplishment which stirs the soul and stretches it out to grasp greater things. Every impulse of the mind must be satisfied; there must be spiritual uplifting with the study, and every woman may avail herself of this uplift.

The important thing is to get the habit of reading. There is no habit that is so easily acquired and so vital to noble life. There should be a shelf of good, readable books in the humblest home. All the beauty of a home counts for nothing if there are no readable books in it. We go into a home and find beautiful rugs, elegant furniture and fittings, every evidence of taste and refinement, but find often a lack of books, that food for the mind which is better than food for the body. You may go into hundreds of homes where no new book has been bought in a year, and yet the great masterpieces of literature are now so cheap and easily obtained that for fifty cents a month one can put on his shelf a book every month, and the family can have the best literature and be cultured and educated. Now with all the great masterpieces of literature that have come down to us every family can acquire a few books from time to time by making a small sacrifice, and can have the best books in the world on the home book shelves; the members of the family can talk with kings and queens.

Never read a poor book. Emerson said, "Never read a book until it is a year old." Never read a weak book, when for fifty or seventy-five cents each the great masterpieces of literature can be obtained. Every woman in Minnesota can put herself in the way of knowing more about them than the students in our colleges and universities know. I would say that what we need is something different from our every day life, something that will take our minds off from our daily duties. I should never advise any group of women to begin reading Browning, although I do not believe anybody has lived in his century who is so rich in strength as Robert Browning; but I fear we would feel like Lord Coleridge when he was asked how he liked Browning's writings. He said, "I liked what I could understand, but I did not understand much." Browning replied, "If a man like you understands anything, it is doing pretty well!" What we need is something pleasant to us that will lead us out of the routine of our lives, that will lead us into something that is a little better, something

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that is a little harder, something that is a little broader, until we attain the breadth that we desire.

It is also well to add the social element to home study, and groups of women can read to better advantage than women alone, because after the reading has been done it is profitable to discuss it, to seek to know the point of view of some other person; in a large group there would be, too, the enthusiastic element, and in a small group there would be congenial fellowship. The Chautauqua movement is a great help to study. There are country clubs where men and women go to each other's houses once a week to discuss some book or some point of interest connected with literature.

Another point needs emphasis: It is necessary to put into action so far as may be those things that are learned. There is no woman who cannot receive better culture by home study in any one department than that which any school or university ordinarily gives. Such study leads to a larger and nobler life better than does anything else we can think of. A university or a school does not always lead to such a life; home study by women can do that. (Applause.)

The President: Although the talk we have just heard was not along the general trend of this meeting, yet we cannot help but feel that it has done us good to get out of our routine line by listening to Miss Evans.

Miss Evans: May I have just one word more. The state library commission would be glad to issue outlines of study for women and issue a book to begin on. You can get into communication by addressing the state library commission at the state capitol, at St. Paul.

The Golden Willow does not do very well on dry soil, and if it has a setback when first planted will often be a considerable time in recovering. It is however, a very fine tree with a round head when growing under favorable conditions. The willows could undoubtedly be mulched with bark or manure to good advantage. Anything that will keep down the growth of weeds and keep the moisture from being tried out of the soil is helpful to that tree.—S. B. G.

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Some Ornamentals Recommended.

MRS. N. S. SAWYER, EXCELSIOR.

MR. LE ROY CADY, ST. ANTHONY PARK.

Committee.

SHRUBS.

Viburnum tomentosum.
Mayday tree.
Burning bush.

HEDGE PLANTS.

Buckthorn.
Alpine currant.
Russian golden willow.
Red twig dogwood.
Common lilac.

VINES.

Ampelopsis (quinquefolia), Virginia creeper.
Ampelopsis (quinquefolia), Engelman's ivy.
Celastris scandens, bittersweet.
Clematis Henryi.
Clematis Jackmanni.
Clematis paniculata.
Clematis Virginiana, native clematis.
Lonicera, honeysuckle, var. Scarlet Trumpet.
Lycium (Chinensis), matrimony vine.
Vitis (riparia), wild grape.

HERBACEOUS PAEONIES.

White—Festiva Maxima.
White—Whitteyi.
Pink—L'Esperance.
Pink—Humei.
Red—Richardson's Rubra superba.
Red—Grandiflora rubra, Francois Ostegat.

PHLOX.

White—Von Lassburg, Pearl, Andreas Hoffer.
Pink—Pantheon, Moliere, Sunshine.
Red—Coquelicot, Matador, R. P. Struthers.
Crimson—Von Hochberg, Eclairem.

DELPHINIUM, HARDY LARKSPUR.

Varieties:
Chinensis, Formosum.
Formosum coelestinum—tall.
Hybrids.

IRIS, FLEUR DE LIS.

Varieties:
Japan, German.

OTHER PERENNIAL FLOWERS.

Achillea, var. The Pearl.
Anemone, Japonica, var. Whirlwind.
Anemone, Japonica, var. Queen Charlotte.
Asterinsia, "old man" or "southern wood."
Aquilegia, columbine.
Althea, hollyhock.
Bocconia, plume poppy.
Boltonia, var. Asteroides, latisquama
Campanula, var. Caspatica Persicifolia.
Campanula, var. pyramidalis.
Chrysanthemum, var. Giant Dairy King Edward VII., Shasta Daisy.
Convallaria, lily of the valley.
Clematis, var. Davidiana.
Dianthus Barbatus, sweet william.
Dicentra, bleeding heart.
Dictansuns, (flaxinella) white.
Digitalis, fox glove, var. grandiflora.
Digitalis, gloxinia flowered, white.
Gaillardia, blanket flower, var. grandiflora.
Helianthus, sunflower.
Hemerocallis, lemon lily.
Mertensia (Virginica), blue bells.
Poppy, var. Oriental, Iceland.
Platvcodon, Chinese bell flower.
Pyrethrum, Persian daisy, var. roseum grandiflorum, uliginosum.
Rudbeckia, golder glow.
Herbaceous spirea, var, ulinaria.
Herbaceous spirea, filipindula palmata.
Stokesia (cyanea) Stokes' aster.
Valeriana (officinalis), garden heliotrope.

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Horticulture Then and Now.

GEO. J. KELLOGG, JANESVILLE, WIS.

The "*then*" was away back when the only apples were the wild native crabs with which our mothers in the thirties used to flavor the coarse flour puddings—those puddings with the sweetened cream tasted most excellent.

The wild plums were excellent, the thorn plums, and the thorn apples. These dates go back to 1835, at Pike River (now Kenosha), Wis.

When I planted the first R. I. Greening trees in the spring of 1837 in Kenosha Co., we thought we could grow the varieties of New York, and we kept on trying till the hard winter of 1856-7 brought us to a standstill. We viewed the ruins of our orchards and took notes; those varieties that came through unhurt we tied to, and in the early history of the Wisconsin State Horticultural Society we recommended a list of five apples, to none of which I should object, as follows: Red Astrachan, Duchess of Oldenburg, Fameuse, Talman Sweet and Golden Russet.

That list for many locations is a good list today. Red Astrachan trees forty years old are still bearing; Duchess is a universal success; Fameuse, or Snow, is a favorite in any list and when properly sprayed is free from scab and everybody likes it; Talman Sweet we still retain as one of the reliable sweet apples we must have; while Golden Russet is one of our best keepers and when rightly packed comes out in spring fit for a king—in the fall of 1906 we saw two trees of this kind in the city of Jefferson, Wis., carrying twenty-five bushels of nice apples each, and they did not seem to have had more than ordinary care.

The labors of all these years have not been fraught with the success we might have wished; all the seedlings Wisconsin has brought to the front have been accidental. The Pewaukee's parentage was guessed at; the Wolf River was supposed to be a seedling of Alexander; anyone can guess at the parentage of our other valuable seedlings, but there is no data to show cross-fertilization, and those who have produced new varieties from a known seed find only traces of the one parent. The finest tracing comes from the seedlings of the Malinda—more show the parentage than any others I know of. The Wealthy has made Minnesota famous as a fruit state. No state in the Union has produced an apple so universally successful everywhere. Once Peter Gideon sent me a little circular saying, "If you want to be wealthy plant the 'Wealthy.'" I would add if you want apples plant

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the Wealthy and Longfield. Nothing else among the 900 Russians equals the Longfield for profit. It did better the past season than Wealthy in my garden. It was more perfect in fruit and gave better returns, under the same treatment. Of all the Russian craze, nothing else remains of as great value.

Yellow Transparent where it does not blight is very desirable. This blight question takes the profits out of all the Russians and many of our own valuable varieties. If anybody has tried this new paint that makes a tree blight proof let him tell the facts outside a circular advertisement; if it will save our trees from rabbits, mice, borers and blight we all want it and right away. We want a Burbank for the Northwest. The California man has not given us a hardy fruit. We want more Patten's scattered all over this country, more Hansen's, more Underwood's, more Gideon's, more Green's, more Cashmans', more Yahnke's, more Philip's, more Elliot's, more Latham's, more of the best elements of horticultural zeal and progressive research, and we are going to get them in the "Plant Breeders' Auxiliary." Why, there is a thousand starting in this new line of experimentation, and the "Wedges" are already growing that will split open the problems that now confront us.

My Berry Garden.

JENS A. JENSEN, ROSE CREEK.

The Strawberry.—In planting strawberries there are two things that are necessary: first, to have good plants so as to produce runners and plants; second, to prepare the land well. If the land is not clean, you will have as fine a job as I had to keep it clean. Cultivation should be started soon after planting, at first once a week and later every two weeks. Hoeing will have to be done as often as weeds start, in the rows where the cultivator can not reach them. After the runners start cultivation should be one way only, to draw the runners into the row to make plants. I have found it necessary to continue cultivation until October first. You should then have a row from two to three feet wide. Five feet between the rows and sixteen inches between the plants will make a good bed.

You would now like to know how many quarts a man can raise from a piece of land treated like this. From two rows sixteen rods long I sold 133 quarts for $13.35. From fifty to seventy-five quarts were canned and used in the house during the season.

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I always cover my strawberry bed with straw after the ground is frozen solid.

Raspberries.—I plant raspberry rows six feet apart and the plants four feet apart in the row. Clean cultivation is necessary, especially the first year. The red varieties I let grow into solid rows one and a half to two feet wide. I have three varieties of the red. The Turner, Loudon and King. The Turner has been the best with me, taking it all around. We have always had some berries. The Loudon has a better and larger berry for home use, but it is more subject to disease and mildew of both plant and berry. You cannot pick it until it is fully ripe, and then it is too soft to stand shipping. The King is a good strong plant, and the berry is of good size. You can pick before it is fully ripe, and it will ship well. But it has not as fine a flavor as the others. I call it a little flat.

Planting and Care of Evergreens.

C. M. JENSON, ALBERT LEA.

(So. Minn. Hort. Society.)

There is one thing that is absolutely necessary in order to handle and plant evergreens successfully. That one thing is moisture and plenty of it.

Always get your evergreens from your nearest nursery. If possible, go to the nursery yourself and have the trees dug while you are there. Choose some rainy day if possible; if not, be sure to have enough wet material to thoroughly cover your trees.

The ground where the trees are to be planted should be prepared in the fall. It will then be well packed and full of moisture in the spring.

Do not plant your trees too close to the buildings or to each other. It is only a few years ago that most nurserymen advocated planting windbreak evergreens from six to eight feet apart. Now the general opinion is that the distance ought to be twice that much and instead of having only two rows of trees have three or four rows.

Cultivation should commence at once after the trees are planted. Some low growing crops, such as potatoes, beans, strawberries, garden truck or anything that makes a thorough cultivation necessary, can be planted between the trees during the first four or five years. After that either mulch the ground or seed it down.

When planting ornamental evergreens be sure to get them far enough away from your house. Some years ago I planted a number of red cedar within fifteen feet of the house, but that is altogether too close. The distance should have been three times as great.

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SECRETARY'S CORNER

PRESERVING EXHIBITION FRUIT.—Use for this purpose a preparation consisting of 78% water, 2% formaline and 20% alcohol. A preparation for this purpose similar to the above used not to contain the alcohol, but it is found that the alcohol assists in hardening and preserving the fruit. Of course fruit for this purpose should be fresh and free from imperfections to get the best results.

THE AMERICAN PEONY SOCIETY.—This society was in session at Ithaca, N. Y. on the same day as our summer meeting, holding over during the following day. Negotiations are on foot for a joint meeting with the American Peony Association in the Twin Cities next year, which we have reason to believe will come to a successful conclusion. The matter was to be taken up at their annual meeting for decision.

THE AMERICAN ROSE SOCIETY.—This organization held its annual meeting in Bronx Park, New York City, June 10th and 12th last. The premiums were very large, as they should be at a session held in the most central place in America commercially speaking. We are in hopes that at some time not far distant it may be possible to secure the meeting of this organization in the Twin Cities, and it is to the possibility of such an event that Mr. Underwood referred in his talk before the summer meeting.

HAIL IN MR. SCHUTZ' ORCHARD.—A postal received from Mr. R. A. Schutz—well known to our members as lecturer on horticulture in the Farmers' Institue—shows a pile of hail stones, many of them half an inch in diameter, described as "hail stones gathered at Ostrander, Minn., twenty-four hours after the hail storm of June 20th." Mr. Schutz reports conditions as nearly the same at his place, and his orchard so badly damaged that there will be no fruit this year.

A HANDSOME STRAWBERRY SEEDLING.—A basket of seedling strawberries was received at the summer meeting, on June 23rd, last, late in the afternoon, just before adjournment, too late to be exmained in competition with other seedlings. It came from Mr. A. V. Gardner of Hastings, Minn., and was a fruit of sufficient merit so that a special award of $3 was made to it. We are in hopes to see this seedling again under circumstances giving an opportunity for comparison with other seedlings and standard varieties.

THE ROSE SHOW AT ST. PAUL.—Just as we go to press word comes in of the extraordinary success of the summer exhibit of the Minnesota Rose Society, made in St. Paul June 30th. They report over 600 in attendance paying admittance fee of ten cents, and the acquisition of a considerable number of members. The exhibit was a very fine one indeed, and especially so considering the severe storm on the morning of the show. Something over 200 entries were made. A report of this exhibit more in detail may be looked for in the next issue.

PHOTOGRAPHS OF SUMMER MEETING.—Two views of the summer meeting were taken, showing the gathering seated at the picnic dinner in Armory Hall, the one view taken from the west showing the east half of the hall, the other taken at the same time showing the west half of the hall, This is a large sized photograph, 7-½ by 10 inches. Many of the faces come out clearly, others are

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of those more or less uneasy and are blurred in the picture. If the reader was present at the meeting, and knows which half of the hall he occupied, the photograph can be orderd which will contain his picture. They can be secured at a cost of fifty cents each from the photographers, S. E. Johnson & Company, 23 S. 6th. St., Minneapolis.

PROF. GREEN AND THE SUMMER SCHOOL OF FORESTRY.—Two days after the summer meeting, on June 25th, Prof. S. B. Green, our president, went to Itasca State Park to take charge of the Summer School of Forestry, to be held there for six weeks during July and the first half of August. During this period his address will be Arago, Minn. There was a small forestry school in the park last summer. This year it has grown to considerable dimensions, and there are to be half a dozen professors as instructors, and other practical forest men as assistants during the period the school runs. This offers a splendid outing for the professors and students. The school is already a popular one and will grow to large proportions. The writer knows something of the situation there, having spent a couple of days on the shore of Itasca Lake at or near the site of the school, during the month of May last. One of nature's beauty spots is Itasca State Park and destined to become a very popular resort.

GIDEON MEMORIAL FUND.—The excutive board of this Society, at its regular semi-annual session, held in this office June 22d, made an appropriation sufficent to bring the Gideon Memorial Fund up to the sum of $500, and arrangements were made to deposit this fund with the Board of Regents of the State Unviersity to be put at interest, the amount of interest to be used annually for prizes in connection with the work of the horticultural department of the State Agricultural School, at the discretion of the professor of horticulture. This should give an annual fund of twenty to twenty-five dollars, which barring accidents, would continue indefinitely. Each annual distribution of prizes would be accompanied by a statement as to the circumstances connected with the creation of this fund, which would make our memorial in very truth a perpetual one.

While this disposition has been made of the Gideon Memorial Fund, it must not by any means be considered that there is no longer opportunity to contribute thereto. Several contributions have been received only lately, and contributions may be sent at any time to the secretary of any desired amount, which will be from time to time added to this fund, increasing thereby the annual amount available. The original purpose was to have made the fund $1,000, and it ought to be possible yet to increase it to that amount. Every grower of a Wealthy apple tree should have an interest in this fund, and in proportion to the number of trees grown. A contribution of five cents for each Wealthy tree planted and in bearing would fall very lightly on the contributors, and bring in a sum far in access of what is desired. Please take this matter up promptly on reading this statement and remit to the secretary without further correspondence. A fine portrait of Mr. Gideon, framing size, will be sent pospaid to each contritutor of one dollar and upwards.

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HARVEST TIME IN THE ORCHARDS OF THE JEWELL NURSERY COMPANY, AT LAKE CITY.

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THE MINNESOTA HORTICULTURIST

Vol. 36 AUGUST, 1908. No. 8

Harvesting and Marketing Apples.

E. C. WARREN, LAKE CITY.

There is no period in the process of caring for the orchard that we can call unimportant, but we will do well when we come to the time of harvesting and marketing our apple crop to give the matter much careful thought and study. If we neglect to do this, after we have been to the expense of pruning, spraying and cultivation, we shall fail to reap the reward that should be ours. The apple is the fruit of the masses, and its consumption is annually increasing in this country. We also enjoy an export trade of from two to five million dollars annually. While the apple is the king of fruits, it undoubtedly has to stand more abuse in handling than any other variety of fruit. It is estimated by some fruit handlers that less than twenty-five per cent of the crop is picked and packed properly. This condition of things has brought about an increased demand for fancy and selected stock. There are plenty of customers who are willing to pay an extra price for selected stock, packed in clean and attractive packages. Good stock is never relished when taken from an untidy package, while inferior stock will be somewhat improved if taken from neat and clean packages. All this should mean to the ambitious orchardist that if he would do his best he must handle his fruit carefully, giving especial care to the grading and packing. Above all be honest in the packing. If you hold your stock up to grade, you are able to hold your customer. If you fail to do this, you will probably have to look up a new customer.

There are always buyers for the lower grades at market value, and many times these people get the best of us through careless grading. Ten per cent of inferior stock will lower superior stock twenty-five per cent.

It is a hard matter to prescribe methods for handling apples, except in a general way, on account of the varied conditions. The main thing is to handle them right with as little expense as possible. As time is money, we want to pick, grade and pack as quickly as possible without abuse of the crop.

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There are many devises for picking apples, and some of them of much merit, but we prefer the half bushel elm stave basket, lined with burlap, to pick in. The fruit when picked is taken to a table, centrally located, which is about six feet square and thirty-two inches high, which should be upholstered with excelsior and burlap. The apples turned upon this table enables the packer to quickly determine his grade and place in barrels arranged around the table. This method also insures the removal of all leaves and twigs. The first two layers of fruit should be carefully placed with stem down, and should consist of the best fruit for that grade. Afterwards fill the barrel, giving a gentle shake to insure a solid pack. When filled they should be

Minnesota apples by the car load from Lake City.

taken to a cool place and allowed to stand from twenty-four to forty-eight hours before heading. In picking late varieties the pickers should be instructed to pick only mature fruit. The mature fruit keeps much better than the immature, and all fruit does not mature at the same time. This necessitates going over the pick the second time. When ready to close the barrels, fill two inches above the top of barrel, with last two layers stem up. If placing in storage or in car, stand barrels on end. Never roll barrels about on the side. You cannot do this without injury to the fruit. Use a barrel truck when handling.

In conclusion, there are about four things to carry in our minds: 1st, careful picking; 2nd, careful grading; 3rd, honest packing; 4th, keep the fruit cool and dry. Keep this up, and your customers will find you out.

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Harvesting and Marketing Apples.

J. P. ANDREWS, FARIBAULT.

In the gathering and marketing of apples, much of the success depends upon the careful handling and grading and, if warm weather, upon the cooling of fruit and ventilation of barrels.

Light ladders, made pointed at the top and wide at bottom, are convenient to reach such fruit as can not be reached from the ground.

If weather is warm, barrels should have some ventilation and should not be packed till fruit is cool. Write the name of the variety it is to contain on one end of the barrel and open the other end. Face two rows stem down in the bottom of the barrel and fill in with equally as good fruit, shaking the barrel two or three times while filling, and round up an inch or two before pressing in the head.

One-half bushel baskets, with hinged handle, allows of putting the baskets clear to bottom of barrel before turning them out.

This year the crop run so evenly good that all seconds and culls could be removed while filling and emptying the baskets. When fruit runs very uneven a sorting table is quite a convenience, made about four or five feet long, three feet wide at one end and one foot at the other, with boards up at the sides eight or ten inches high, so that it will hold two or three barrels. The narrow end should be lower than the wide one, and slatted to let leaves or litter fall through as the apples roll down to the lower end, or outlet, into an apron. This is tacked to the table and can be let down into the barrels, and fruit rolls out without bruising.

Our fruit is sold through a commission house, and in our local market.

Harvesting and Marketing Apples.

J. A. HOWARD, HAMMOND.

The first step in marketing apples is to properly harvest them, and that means that everything should be in readiness so that no time may be lost when it is time to begin harvesting the apple crop.

To get the best results I think the orchard should be picked over twice, picking the largest and highest colored fruit the first time and leaving the rest for a week or ten days, when you will find it will be nearly as good as the first picking. But the marketing of the apple crop to one who has a commercial orchard is a subject of vital importance if he has a large crop to dispose of.

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The demand for apples in the Dakotas helps solve the problem, as it will be a long time before they raise apples enough to supply the home demand.

The man that has a large crop of apples to dispose of will have to be up and doing, look up the markets in every direction, get the market reports every day, get the commission men interested to come to your station and ship them out in carload lots—and, by the way, that is

J. A. Howard has help harvesting his Patten's Greenings.

the only way the man with the small orchard will get anything out of his crop, as he will neglect it for his other work till his apple crop is too ripe to handle profitably.

But if a man is a rustler and looks after his apple crop at the right time, he will get better returns nine times out of ten for the time and money expended than from anything else on the farm. At least, that has been my experience.

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Harvesting and Marketing Apples.

R. A. WRIGHT, EXCELSIOR.

Harvesting the apple crop is a very important part of the apple business. If the fruit is not gathered properly, being more or less injured by careless handling, it loses the very essential "prime condition" which enables the producer to market it to advantage. When picking the apples, they should be handled carefully to avoid bruising, as each bruise, though slight, will be very noticeable a few days afterward. It will be readily seen that this result of careless handling, places the fruit on the market at a great disadvantage, even though it has been carefully packed in neat packages. I have seen pickers climb into an apple tree and after fastening a market basket to a branch of the tree, they would pick the apples, dropping them into the basket instead of placing them in carefully. As a result much of the fruit was bruised, for a bump caused by the apple falling even a few inches will injure the fruit. It will be seen that this fruit should be handled carefully and never allowed to roll and bump against each other. I fully believe that if the producers realized how many dollars are bumped out of their pockets by the rough handling of their apples they would be more careful, for only by care will they bring the best price.

Minnesota is steadily and, we might say, rapidly advancing in this line of fruit raising. We have many apple orchards yielding from 100 to 4,000 bu. each. It stands us in hand to make a reputation for the apple market of our state. This can be done only as the fruit is put on the market in the best possible condition.

Another important item in the working out of this problem successfully is the fruit package. Some are using the second hand barrels covered with burlap. Is this wise? Let us stop for a moment and consider. Last fall two of our larger growers packed their Duchess and Wealthys in second hand barrels, covered them with burlap and delivered them to the commission man, who sold them for $4.00 a bbl. The merchant told them if they would pack in new barrels and face two layers at the top, he could get them a better price. They acted upon his suggestion, and the same quality of apples brought $5.00 and $5.50 per bbl. Later in the season they brought as high as $8.00 a bbl. The merchant told me it would have been utterly impossible to have gotten that price for the apples packed in the second hand barrel, and that he could have got $3.00 per bu. in boxes.

The bushel basket is quite largely used in carrying apples to market, but it is in reality a very poor apple package. In transportation they are piled three or four deep, and this pressure bruises the

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apples badly. In this bruised condition they are placed upon the market and must be sold for less than they should be. Another loss comes to the grower through this way of shipping through the freight handlers helping themselves freely to the very best. No matter how well the covers are wired down, they are often removed and quantities of the choicest fruit taken. I think the apple box will displace the bushel basket. They cost less, and the freight is less. They cost less than the barrel, while they carry the fruit as safely and are much more easily handled.

I feel sure that apples packed in new boxes or barrels, with the two upper layers faced nicely, will more than pay for the new packages and the time of packing. The second hand barrel should be discarded or used only for the poorer grades of apples.

I will relate an instance of careless or dishonest packing that came under my observation last fall, and the result shows how the producer is the one who suffers. One of our growers is very careful in gathering and packing his apples. His reputation is unquestioned on the market, and his commission merchant feels perfectly safe in selling them. In this instance he sold two barrels of Wealthys for $8.00 each. The following day he received a 'phone from this grocer ordering two more barrels like the first. He replied that he had no more Wealthys from that same grower, but he had some from another, and while the apples were not quite so nice he could have them for $7.00 a bbl. The grocer took them. The following day the commission man was called up and told that he would have to discount those last two barrels $1.00 each, for each barrel had three pecks of a different kind of apple in the center. He could do as he chose, discount them or take them away. Of course he had to throw off the $2.00. Besides losing the $2.00 the producer lost the confidence of the commission merchant, for he could not guarantee this man's fruit after such an experience.

The nicest way to pack apples in barrels is to leave the top, or head, in and take out the bottom. Then, with the barrel upside down, place two layers of nice apples stem end down. Then pour in carefully without bruising enough apples to well fill the barrel; jar a little so the apples will settle together; put the bottom in and nail it. Stamp or write the name of the variety across the head.

I believe the time has come when the apple growers of this great state should study more and more the best methods and ways of gathering and marketing their apples. They should visit the market often and find out from their merchant the best selling package, the best way to grade and pack, and keep in touch with the market and when there is a glut hold up their shipments for a few days or a few weeks.

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By careful grading and packing in nice clean packages, may we not establish a name and market for our apples unsurpassed by any state? For what state grows an apple to compete with our Wealthy selling at $8.00 per bbl.?

Mr. A. Brackett: These are very good papers, but I think there was one point overlooked, or else I did not hear it. The point I refer to is this, that in packing apples it is necessary to press the cover down on the apples so that when the barrel is shipped the fruit will not be

Harvesting Wealthy at H. F. Bussee's, St. Anthony Park.

shaken about. I know from experience that it is very essential to press them firmly.

Mr. Wright: Of course you understand that my paper was for the benefit of the smaller growers; the larger growers know how to handle their apples. but I know from experience that the smaller growers give this matter very little attention, and they do not get the prices they ought to get for their fruit, and it is often because the head of the

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barrel is not pressed in. The larger growers have a press made on purpose to accomplish this object.

The President: A lever about nine feet long will answer the purpose very well.

Mr. Geo. J. Kellogg: If a man ships his apples in barrels he ought to have his name on the barrel, and especially the one who puts three kinds of apples into a barrel ought to have his name on the outside of the barrel.

Mr. J. F. Benjamin: Is it advisable to pick fruit before a hard freezing comes?

Mr. Wright: You will have to ask some older and more experienced man.

Mr. President: Ask Mr. Wedge that question.

Mr. Wedge: I did not hear the question.

The President: The question was, is it desirable to pick fruit before it is frozen?

Mr. Wedge: Why, yes, certainly. (Laughter)

The President: I think Mr. Benjamin referred to light autumn frost.

Mr. Wedge: I have set a date in October when I wish to have my apples safely picked. I think it is the fifteenth of October, but I am not sure. While I am on my feet may I say a word or two on this matter of harvesting and marketing apples? I happen to have had considerable experience during the past two years. There are a few matters not mentioned in these papers that I might touch upon. Is it not interesting and encouraging to think that we have arrived at a stage in the life of our horticultural society when one-third of one of the most important sessions is devoted to the subject of harvesting and marketing apples? It does mark an era in the development of orcharding in Minnesota. What I have to say will more properly apply to the southern half of Minnesota, or that part south of this latitude. In the first place, in our section we must arrive at a full understanding that our home markets will be fully supplied. There is no use in depending upon our local markets. If we did that, we would be very certain to secure but a small share of the value of our fruit, because they have been naturally supplied by the grower who does not produce enough apples to find an outside market for them. So we must look for buyers from abroad for the fruit of our orchards—and, right here, we must have the right kind of fruit to sell. We must have the right kind of fruit to sell, and that is where the red apple comes in. There is something about a red apple that makes it sell better than any other color. It is a color that catches the eye, and it is a color that does not show the bruising of an apple as much as a light colored apple would. A red apple will stand considerable bruising without detracting from its selling quality. We do not have to handle them quite so carefully as we do light colored apples. One of the most important points is to have the package ready from the buyer. Be sure you have them in good season, so you can have your fruit barreled when it is ready for the market.

Now, as to the way to sell. I have had quite a little experience in

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selling in different ways to commission men, and I have generally done it in one way as the only safe way, and that is to sell the fruit right in the orchard. Make your commission man come to you and pay you for your fruit right in the orchard. You will then avoid any misunderstanding, and there will be no trouble after the fruit has gone out of your control, but there is almost sure to be a misunderstanding if you make the count of the barrels yourself. I sold a commission merchant of St. Paul a carload of apples with the understanding that he was to take them in the orchard and pay for them in the orchard and not in St. Paul, and I would pay the expenses of his man down there to receive them. I counted the barrels carefully, and my foreman counted the barrels carefully, and the representative of the commission man counted them, and yet at the other end of the line there was a barrel missing. He came onto me and wanted me to make good. I told him I would not do such a thing after I had the money and his man counted the barrels. Now, if his man had not counted the barrels, he might have questioned my honesty. In another car there were three barrels missing. I do not know how it happened, but the claims came up anyway.

In order to get your buyers you must correspond with them early, the same as your packages. Get hold of your packages and your buyers early. They will come to you, or you and your neighbors can club together.

Do not let your fruit get too ripe, although that did not apply to this last season. Look out for those hot days in September that ripen the apples prematurely, when they become soft and drop to the ground in a few days. This applies to the Duchess as soon as the seeds are pretty well colored, without reference to whether they are absolutely ripe.

In regard to the gathering of fruit, there was a mention made of it, but they did not tell you how to get the fruit from the orchard to the sorting table, and that is a very essential feature in the proper gathering and marketing of apples. I use a one horse wagon and drive between the rows where the apples are ready, placed in half bushel boxes, and they are sometimes carried a quarter of a mile to the sorting table. On the return trip the empty boxes are brought back. Do not handle the apples more than is necessary. (Applause)

Mr. Clausen: The question was asked whether it is necessary to pick apples before it is freezing. I have been able to pick mine early. I let a few of the Malindas stay on the trees after freezing weather came, and they have not been injured whatever so far. I cannot tell what the result would be if they should freeze hard.

The President: A great many people are scared when we have quite a hard freeze and the apples are hanging on the trees. It is a thing to be avoided, but the apples will often come out in good shape. I have seen apples covered with sleet, and yet those apples were exported to England. It is something that should be avoided, but you need not get scared. However, don't take any chances unless necessary.

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Constitution of Horticultural Society Formed at Duluth.

Article I. This Society shall be known as the Northeastern Minnesota Horticultural Society.

Article II. Purpose: The purpose of this organization is to consider subjects pertaining to horticulture or any other matter of interest to the citizens of Northeastern Minnesota and to do anything to improve the town and its vicinity, or advance its material interest, political and religious subjects being strictly barred.

Article III. Membership: Any person may become a member of this Society for the current year by paying to its Secretary an annual fee of one dollar ($1.00), the wives of the members being honorary members with all the rights and privileges of the paid members. The annual membership shall expire at the opening of the annual meeting of this Society. This Society shall ally itself officially with the Minnesota State Horticultural Society as provided for in the constitution of the latter Society.

Article IV. Officers: The officers of this Society shall consist of a president, a vice-president, a secretary, a treasurer and an executive board of three, of which the president and secretary shall be ex-officio members. All officers shall hold office until their successors are elected and qualified. The president, vice-president, secretary and treasurer shall be elected for one year. The members of the executive board shall be elected for a term of three years, being elected at the first election held as follows: one for three years, one for two years, and one for one year. At each annual election thereafter, one member shall be elected for a term of three years.

Article V. Duties of the Officers: The duties of the officers of the Society shall in general be the usual duties in similar associations.

The president shall preside at all meetings of the Society and under the direction of the executive board have the general superintendence of its affairs. He shall sign all orders on the treasurer after the account for the payment of which the order is drawn has been audited by the board.

The secretary shall receive and pay over all moneys collected to the treasurer and keep the records of the Society.

The treasurer shall pay out funds only upon order of the president countersigned by the secretary.

The executive board shall have general charge of the affairs of the Society, reporting its proceedings at each regular meeting of the Society, with an annual report at the annual meeting. The executive board, at its first meeting after the annual meeting, shall elect one of its members chairman.

Article VI. Program Committee: The president with the advice of the executive board shall appoint from time to time a program committee, whose duties it shall be to prepare programs for the regular meetings of the association. This committee may be appointed to act for a single meeting or for a definite period, at the discretion of the president.

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Article VII. Meetings: The Society shall hold regular meetings on the second Tuesday of each month, at the Duluth Commercial Club, unless otherwise directed by the executive board. The annual meeting will be held on the first Tuesday in January, at which time the officers shall be elected for the year and the annual reports of the officers made. A special meeting may be called at any time by the executive board, not less than five days notice being given to the membership.

Article VIII. Quorum: Eight members of the Society shall constitute a quorum.

Article IX. Amendments: Amendments to the constitution may be enacted by vote of two-thirds of the members present and voting at any regular meeting, notice in writing of said amendment having been given at the regular meeting immediately previous.

Winter Protection of Flowering Plants.

JOHN HAWKINS, MINNEAPOLIS.

The subject of preparing plants to withstand the winter is a very important one and should be given more careful attention. Success or failure often depends upon the care plants receive for the winter. Some of our choicest flowers are almost sure to winter-kill without protection which when properly protected will come through the winter in perfect condition, and the grower will be rewarded with an abundance of beautiful blossoms in compensation for a few minutes labor required in applying the covering. Much depends upon the condition of the plants when they go into winter quarters, whether they will withstand the winter or not. If the plants have made a reasonably good growth during the summer and the wood is well matured and the soil in a good moist condition, there should be very little trouble.

An ideal covering for all plants is a permanent blanket of snow, but in this climate we cannot depend upon this and must look to artificial material for protection. The idea of winter protection is not to keep the plants from freezing but to prevent the alternate freezing and thawing which is so fatal to many plants. Generally the most damage is done towards spring, when we have sudden changes in temperature, but if properly covered the damage resulting from this thawing and freezing weather will be slight, because the plants will be kept at nearly the same temperature, thereby preventing premature growth.

It is sometimes difficult to know exactly when to apply the winter covering, but as a rule it should be done as soon as the ground commences to freeze, generally about November first. Before any covering is done, care should be taken to see that the drainage around the plant is good. If it is not, some arrangements should be made to prevent any

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water from standing around the plants. This can be done either by opening up a small trench, to allow the water to escape or by pulling up earth around the plant so as to form a small mound. It is essential to have the plants go into winter quarters in a dry condition.

There are two main points to be kept in view in covering roses and other tender shrubs. First, use the covering that will be the most effective in keeping the plants from alternate thawing and freezing and at the same time allow some air to get at the plants. Second, provide some means to keep the plant as free from moisture as possible, by applying a covering of tar-paper, boards or other material that will answer the same purpose.

Where field mice are troublesome it is well to defer protecting until after we have had some severe freezing weather, so as to allow the mice to seek winter quarters before the bushes are covered. As a further precaution poisoned cornmeal can be placed among the plants, but it should be placed where it can easily be removed when the covering is taken off in the spring.

Where only a few plants are to be protected, it is well to cover lightly rather early, and as soon as cold weather sets in a heavier covering should be applied. For roses and other tender shrubs a protection of ten or twelve inches of dry leaves or straw and on top of this tar paper or boards will make a good covering. Some prefer covering the bushes with soil followed by six or eight inches of coarse manure. I consider the former covering the better.

Perennial plants, such as lilies, phlox, etc., simply need a covering of an inch or two of well rotted stable manure, which should be worked into the soil the following spring. The stalks of perennial plants should not be removed until spring.

Shrubs which are termed half hardy, such as weigelia, cut-leaved Persian lilac and other shrubs of this class, can be staked and wrapped with straw or burlap. Where rabbits are numerous, spirea Van Houtii and other shrubs that rabbits are especially fond of should be wrapped to prevent damage from this source. Tree protectors should be placed around the bodies of all fruit trees, or if this is not done wrap with burlap, straw or cornstalks to prevent damage from rabbits and at the same time prevent sunscald or body blistering.

In the spring as soon as severe freezing weather is over, the covering should be removed gradually so as to allow the plants to become accustomed to the open air. When all the covering has been removed, the plants should be looked over carefully and all dead, broken or weak branches removed.

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Reciprocity between Scion and Root.

EDSON GAYLORD, NORA SPRINGS, IA.

I speak from facts gathered from that bitter school of experience here in the Northwest during the last half century, and brevity compels me to refer to only a few points that I deem to be of most urgent importance to my co-workers, who are so earnestly striving to advance the cause of pomology here in this hitherto untried Northwest.

About 1881 I grafted a half hardy kind on one side in its top with the Wolf River. In the spring of eighty-five the top was all dead except this one graft. That lived two years longer and kept its side of the stem green to the ground. In the spring of eighty-five, I found all but two dead out of some twenty-five Wealthys—dead top and root. Five of these were grown on young Transcendent trees that had been started on tender roots. The two that survived this terrible reverse were grown on crab roots. One of these bore a wagon load of fine Wealthys that season; the other bore heavily until its top was blown to pieces by a heavy wind when loaded with apples.

The stem of this tree has been sprouting out five feet above the ground, and its root has sent up a sprout five feet. These trees are on a very trying site, where everything but crabs and Duchess killed. One Gideon graft on Hyslop lived and has been bearing a full crop every year since. Mr. Heinz had five Fall Orange, four on their own stems and one on crab stock, the four killed while the one grafted on crab stock came out unharmed in 1885.

I grafted a Fall Orange on a Hyslop that bore a full crop in 1885 and has been for these many years the pride of the man's orchard who brought to my home the first apple trees ever set in Northern Iowa. Recently this blew over in a storm, heavily loaded with splendid apples. I closely examined the roots of this tree, which showed that tender roots the crab had grown were all rotten and the tree had kept its place since the root-killing winter of 1899 by the surface roots that had grown out from the Hyslop stem near the surface.

I had Red Charlamoff, hardy as Duchess. One showed life till August, when it gave up the ghost full of apples on two-thirds of its top. The other third kept alive and matured a fine crop, but this one-third died the next August. Later on I grubbed out the tree and found all the roots that supported the side that killed out first, rotten. The other showed plainly it had been kept alive by a few roots that had grown out from the hardy scion. These hardy roots I had to cut to get out the tree. These are *dry, stubborn facts,* well known to many of our tree dealers more than twenty years ago.

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Nothing cheers me more now than to read notes or words spoken out, exposing the *supreme fallacy of setting any more fruit trees grown on tender roots* in Northern Iowa or Minnesota. Since eighty-five I have studiously avoided setting fruit trees grown on tender roots and have done everything to induce hardy roots to start out from the hardy scions. By this I have succeeded in growing some two hundred varieties of apples, fruiting a hundred or more choice kinds that our leading tree dealers declared over and over could not be made a success. This has all been accomplished on a fourth rate location. *Come and see!*

Women's Interest in Forestry.

MRS. WILLIAM ELY BRAMHALL, ST. PAUL.

I find the subject "Women's Interest in Forestry" conducive to a moment of personalities. It is well for us to remember that the two "First Women" of Minnesota—yes, our state is so fortunate as to possess *two first women;* Miss Evans, of Carleton; and Prof. Sanford, of our University—were, also, the women who, with keen insight and ready sympathy, originally brought the claims of forest protection from the State Educational Association to the organized women, pledging the State Federation to the appointment of a committee to care for the interests of what Mr. Enos Mills is fond of calling, "Our friend, the trees."

Nor can state affairs be considered without reference—it ought to be an eulogy— to the one who is gone from our midst, Mrs. Lydia Phillips Williams, whose eloquent voice and warm enthusiasm were ever ready to respond to the need of spreading forest gospel.

Passing to briefest general mention, I doubt not you are familiar with the very practical achievement of Miss Mira Dock, of Pennsylvania, whose ability and successful labor came to be so well recognized that a governor of that great state placed her upon Pennsylvania's Forestry Board.

You know, too, of the work of that fine committee of California Club women guarding the grand old groves of Sequoias, and—not, so much finally as in climax—I come to our National Federation Chairman of Forestry, Mrs. Peterson, of Chicago, whose personal greeting, indeed, I have the honor to bring you today.

The work of her national central committee has aimed to filter through all state committees, educating and fostering local forestry work of every kind, while especially striving to unite all energies in securing that great National Appalachian, White Mountain Reserve,

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which failing to pass the last session of Congress will be the center of particular effort at the next.

In connection with the attention given this subject at the recent meeting of the National Federation of Women's Clubs, in Jamestown, the Washington Times of June 7th, 1907, has this caption to a paragraph, "A word to Uncle Joe," and in commenting upon the disposition shown by the Federation Women to hold Speaker Cannon responsible for the indifference of the House to the "free art bill," the protection of American forests and the child-labor law, reminds him, "It was this non-voting element of the body politic that passed the pure food law, and if once they get it into their pretty heads that your "Uncle Joe" is blocking the way to other legislation, the only

A virgin stand of Norway Pine in Northern Minnesota.

advice his friends can give is that of the Russian proverb, "Hope in the Lord but exert yourself."

So much for women's interest in forestry, but after all forestry appeals to us not as women but as individuals. Surely it provides men and women with a common purpose. Especially we of Minnesota should realize our peculiar facilities and advantages for taking an honorable lead in this grand work that has become of national moment.

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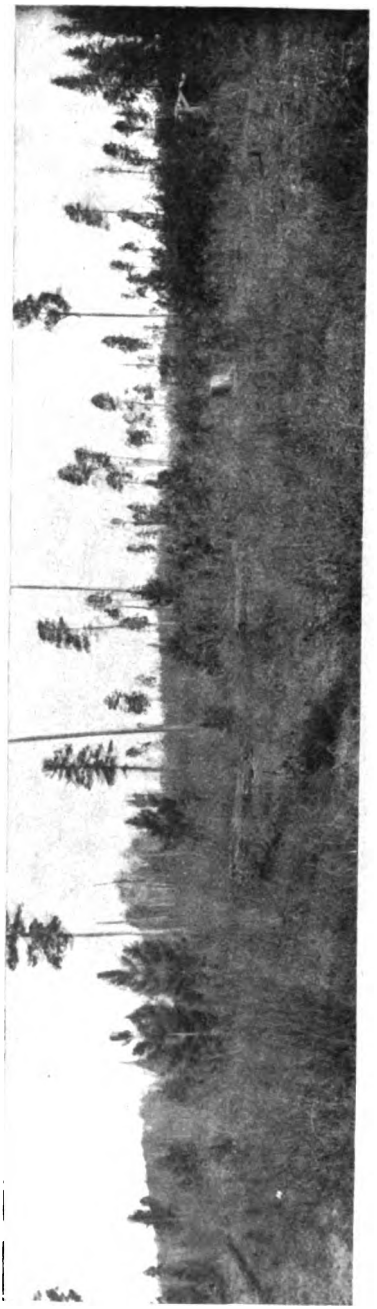
We have forests about charming lakes and at headwaters of streams and rivers to be protected from vandalism. We have miles of useless cut-over land to be reforested and all susceptible of management upon advanced and practical lines under our state forestry officials and the progressive Forest Department of the University. In this way only can Minnesota conserve her share of those greatest of the world assets, wood and water, with which it was once her proudest boast to be so bountifully provided.

But is Minnesota doing this whole-heartedly or even half-heartedly?

A United States consul reports of Norway, one of the lumber reservoirs of the world, that Norway is taking no chances of timber exhaustion. In 1905 he tells us, about 7,000,000 trees were planted, and, as forest planting has been introduced into their schools, about 1,500,000 of the trees were planted by children!

Minnesota, in contrast, as it were, has a thriving little nursery on Pillsbury Reserve, but it is difficult to arouse sufficient interest to obtain money to adequately protect and extend this work even though the reserve itself was donated to the state.

The United States supreme court has decided that the state of Georgia has a right to protect its forests and that the Tennes-



A pine forest after logging, with 5% of trees left standing, all brush and other inflamable material having been removed. This plate shows an especially good Norway pine reproduction which has not been injured in the process of logging.

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see Copper Co., and the Bucktown Sulphur Co., can be enjoined from so conducting their smelter works as to destroy forests or vegetation in Georgia. But we of Minnesota do not even co-operate with the Federal Government in beneficent and far-sighted projects of mutual benefit, if so be some passing purpose of the hour finds it desirable to obstruct them.

And always the refuge is behind "Development." Why the cry of development has been heard so long in the land that we have come to accept any frenzy of waste so long as it serves the purpose of the spasmodic, sometimes entirely fictitious development of some really personal or private interest masquerading as "State Development!"

Cabin of one of our forest rangers. Lined up in front are his implements for fighting fire.

But without our border, nationally, there is coming to be recognized the fact that nature has her own system of economics, and that conservation of national resources plays an equal part with the development of resource, and the old-style waste and destruction has no sanction of any sort. As a result of this, the President has called for an inventory of the natural resources of the country's prosperity and well-being, that they may be wisely and intelligently handled for the benefit of this whole dear land and all its people, present and to come. This is cheering and prophetic.

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We know, too, that the last Pennsylvania legislature passed a law to provide for the planting and care of shade trees on all the highways in town and country. The responsibility of the state is thus recognized as that of a city to its streets.

How advanced a position is this! How very different from that of our Minnesota legislature, who because of apathy (*your seeming apathy and mine; all our apathies*) find it convenient to give right of way to bills for celebrations and monuments, for increase of salaries, and all ephemeral and momentary things, while the adoption of a sane and adequate policy for prevention of forest exhaustion—already calculable and in sight—is neglected and again and yet again pushed aside as unworthy of attention and of statecraft.

Perhaps it is the thrifty housewifely instinct of women that is most offended by this unbusinesslike lack of method and of system in the state's housekeeping, but, however it may be, it is the business of those who care, and our name is legion—the *men who care, the women who care and the men who care for the women who care*—to undeceive the complacent legislators on the subject of our apathy!

Why not have some legislators interested in forestry? Let us secure them! Let us uphold them and show that we appreciate them! And may Minnesota's summer shade always rank in honor with its golden sunshine and its blessed showers, the state's heritage forever!

The Propagation and Care of Perennials.

C. S. HARRISON, YORK, NEB.

In the spring time, in the rush of work, the West lies at the busy end of the world. Yet, with all the hurry there are those who appreciate the need and the value of flowers. Fruits and grains feed the body, but beauty feeds the soul. Flowers are a necessity. A farm glorified with flowers and pleasant surroundings is woman's paradise. I have known *men* to have flowers which they tended with almost worshipful reverence.

On account of the spring rush, you need something that will stay planted. A kind Providence has so arranged the great family of perennials that they put themselves on dress parade for us from early spring until the hard frosts of autumn. A man who can wave his hoe like a wand over a somber piece of earth and make it awake in beauty feels a consciousness of power and that there is a divinity within him.

Crocuses, hyacinths and tulips, of course, are the first to appear, but these can hardly be classed as perennials. So the first we name are the *Aquilegia,* or *Columbines.* Of these there are about fifty distinct

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varieties, many of them natives of our own land. There is a society in Boston making a strenuous effort to have this our national flower. America has certainly produced some very fine ones. The Canadensis is one of the earliest. The Coerulea of the Rockies seems a floating cloud; the spurs are very long, and the flower is of a dainty and almost ethereal beauty. Akin to this is the Chrysantha of the Yellowstone Park—a single flower with the form of the Coerulea, only it is of the clearest yellow. The Coerulea hybridizes very readily with other sorts, and it is impossible to obtain pure seed where it is associated with others. We have to get seed from the Rockies, where there are no others, to make sure. This tendency to cross readily, however, is giving us some very beautiful hybrids.

For years I have raised mixed Columbines, and among them there are many of wondrous beauty, and if one had time to isolate some of the best he would have marvels of loveliness. The Columbine uses up all the tints of the rainbow. The green is in the foliage, and there is a pleasing blend of coloring in a mass of them. They are easily raised from seed, which may be sown late in the fall or very early in the spring. The Rocky Mountain varieties do best sown in the fall. Only have patience with them. Once I sowed three dollars worth of them, and I thought they were not coming up at all. I spaded up the ground and sowed something else, when the tardy plants made their appearance by the hundred. It is almost impossible to get plants true to name. At least six times have I sent for them and have been disappointed. First get the pure seed and stay by it; that is, do not allow it to dry when germinating, and you will succeed.

Columbines should be planted like all other perennials, in masses. I cannot for the life of me see why people should be so stingy when they step out of doors. They build a costly house and furnish it well, but when they go out of doors they expect a half dozen ten cent plants to balance the house. If you have an abundance, you will have bountiful blooms for a month. These flowers are in great demand for Decoration Day, and if you have plenty you can make bouquets of red, white and blue for the soldiers' graves. As the seeds are small it is well to sow them in a bed. I often raise them under a lath screen. When a year old they can be transplanted, or if not too thick let them remain. You can have but little idea of the beauty of a mingling of colors where you have several hundreds of them.

Before these flowers have passed away some of the *Lilies* begin to bloom. These are of two classes, the bulbous and the tufted-rooted ones, like the Hemerocallis, Day lily and lilium Pardanthus. These

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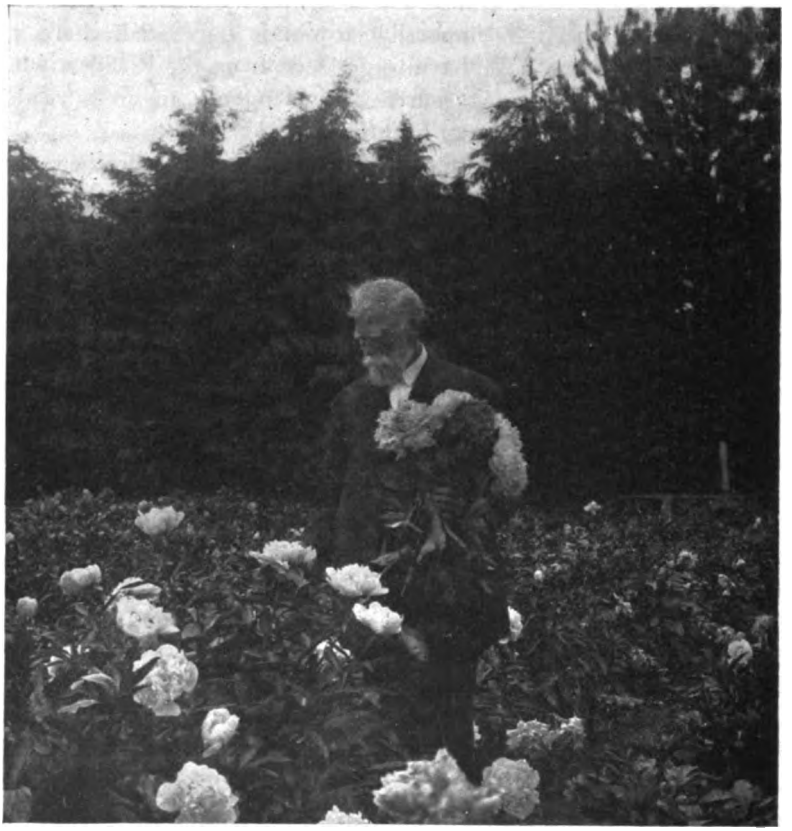
tufted-rooted ones multiply rapidly, and they must be often taken up and the roots pulled apart and re-planted. The bulbous sorts need to be planted deep, some say a foot, which is proper enough if you have sand or light covering above them. One great trouble with lilies is they cannot stand hard freezing. The dainty little Tenuifolia is from Siberia, but there it is under a mantle of snow, the best covering for winter ever invented. The same kind, out on a Nebraska prairie, soon



Mr. C. S. Harrison in a field of peonies.

dies from exposure. The hardy lilies are Rubrum, Candidum; the Tiger, single and double; Elegans and Superbum. The Harrisii and Auratum are too tender to bother with.

Lilies are easily propagated. If planted right, when you dig them up the stem below the ground will be lined with bulbs and bulblets, which when replanted will make fine roots for next year. The stems above the ground are lined with little purple lilies in miniature,

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which look like blackberries. Cut off the stems, loaded as they are and lay them in a trench four inches deep, and you will have plants galore the next season.

About this time the *Irises* begin to bloom. One who has never seen a collection of these rare flowers can have no conception of their beauty. I keep about forty named sorts, of the German family mostly, and I am charmed and delighted by the marvelous display. The Siberian Irises are very hardy and multiply with amazing rapidity. One is of the clearest and most intense blue, and the other is snowy white. One is called Snow King.

The roots of the iris seem to be of two kinds. Some, like the Japanese and Siberian, are of the tufted kind, and you pull them apart by main strength, and they separate into distinct plants. The others are partly bulbous. I think they are called Rhizomes. They multiply rapidly by one little bulb being added to another. I have counted thirty-two divisions from one plant in two years.

This family of flowers increases so rapidly they must be divided every two years. September is a good time to replant, when they can get good roots for winter. We often plant late in the fall and early in the spring with favorable results.

Irises can be readily grown from seed. Last spring I sent for seed of the choicest mixed Japanese and secured a fine stand. Unless grown under a screen, I have found, however, the Japanese are not at all successful, while the German and Siberian are more than satisfactory. A couple of roots from forty kinds will not cost much, and in a few years you have a field of them. A friend had a Pallida Dalmatia given him. This is a sort of grandmother of the family, with wide sword-like leaves and glorious flowers. It was but a few years till he was selling them by the hundreds, and I was fortunate enough to secure twenty-five of them.

Oriental Poppies come on the first of June, and if you never have seen them you can form no idea of their brilliancy. I keep thousands of them, and when in bloom they are like a sea of fire. They are flaming scarlet, the flowers often eight inches across, and in the center the large seed pod, made out of the blackest jet, is surrounded by stamens of the same color. There is an immense amount of work laid out on each flower. Of late years we are getting a diversity of colors. The mahogany, the silver queen and the salmon colored. They are very difficult to raise from seed. You must put them under a lath screen. The seeds are very small and will bear but little covering. Spread burlap over them after sowing and wet that with a sprinkler, every

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night if need be. Watch closely when they begin to come up and take the burlap off at night. If you remove it in the morning, you might have them sun-scalded. Retain your lath screen. I once removed it too soon and lost thousands of little plants to pay for it. Your better way is to get the plants. They are small and long. If you plant in the spring you are sure to lose about two-thirds of them. They should be planted the last of August or the first of September, when every one will live. If you notice, after blooming the foliage dies down, and the plant seems dead. It revives about September first and shows quite a large plant by winter. So they should be planted about the time they emerge from their dormant condition.

Peonies can be raised from seed or propagated by division. If you plant seed, put them in where you want them to stay. Pick the seed just as it is turning, and many of them will come up the first year. Save seed only from the very best. There are already hundreds of thousands from inferior parentage that are of no account. For commercial purposes, peonies should be divided every two years; if you raise them for flowers, you can let them stand five years. These are by far the grandest and finest of all perennials.

Phloxes. Next to the peony these flowers come into prominence. The ease with which new varieties can be produced, the rapidity of their propagation and their long period of blooming, all combine to make them universal favorites.

The Subulata, or Creeping, phloxes are the first to bloom. They are companions of the tulips. We saw them in the Yellowstone Park blooming in all their beauty when ice was forming every night. In color they are pink and white. The next to bloom are the Suffruticosa. Chief of these is Miss Lingard, which blooms early and in favorable conditions keeps at it all summer and well into the fall. Then comes on the full procession of beauty, some early, some medium, some late. Some will be dwarf, and some others robust; some will be tardy multipliers, and some will increase by divisions very rapidly. I find I have to discard about half of the foreign varieties. They are either subject to blight or cannot endure the dry air and the heat of our western climate. What we want is vigor, health and beauty. I have found the following very satisfactory: Althea, Zouave, Sisson, Le Pole Nord, Eclaireur, Queen, and Independence; among the whites: Henry Martyn, Richard Wallace, Esperence, La Soliel, Madam Meuret, and many others eminently satisfactory.

The best phlox in the world is Crepuscule, yet this has one defect. It is a slow multiplier and does not have a very strong root. The wonder is how such a splendid flower can be sustained on such a

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foundation. The second or third year it comes to its best, when the plant is very strong and robust and is a marvel of splendor. It is white with violet shading and has a carmine eye. The florets are immense and so compact that when in full bloom the great systematical head seems one vast flower—an immense globe of effulgence. But its chief value lies in the fact that it makes such an impression on its neighbors that when the seed is planted you have the most splendid hybrids which the world affords. Because of their rarity and difficulty of propagation they are yet high. I have succeeded, however, finely with root propagation, so I am getting a stock of them. The next in prominence is Frauline G. Von Lossburg, an immense white flower of porcelain finish. These two, under favorable circumstances, will have florets larger than a silver dollar.

For commercial purposes, phloxes should be taken up, divided and replanted every year. If you wish to sell, select the largest for that purpose and plant the smallest, which will do for market the next year. Many of the leading florists send out such small plants they should send a microscope with them. They are so small there is great loss in planting them.

In raising from seed, sow always in the fall. They are very hardy and delight in cold and frost, slush and snow, and with these conditions they cannot fail. A dry spring is what they do not like, and they cannot come up unless the beds are kept wet while germinating.

The *Platycodon,* or *Chinese Bell-flower,* is very satisfactory. You sow the seeds in the spring and they come readily, or you can secure the roots, which do not come high. The roots are like a white radish, growing larger each year. They will bloom the first year from seed. The flowers keep open a long time. They continue in bloom over a month. In color they are blue and white.

The *Physostegia,* or *False Dragon Head,* is increased by division. It is hardy and quite satisfactory.

Stokes' Astor and *Digitalis* are very fine but extremely hard to winter. They must be covered with a thick coating of leaves on which something must be thrown to keep them in place.

Delphiniums are coming into favor, and I have ransacked the earth to get the best. Sown early they will bloom the first year. The seed soon loses its vitality, and you get a very poor stand for the amount of seed, and then the plants incline to damp off, so as a general thing you get but a poor yield for the outlay. I have the best success in sowing the seed along in July as soon as ripe. They

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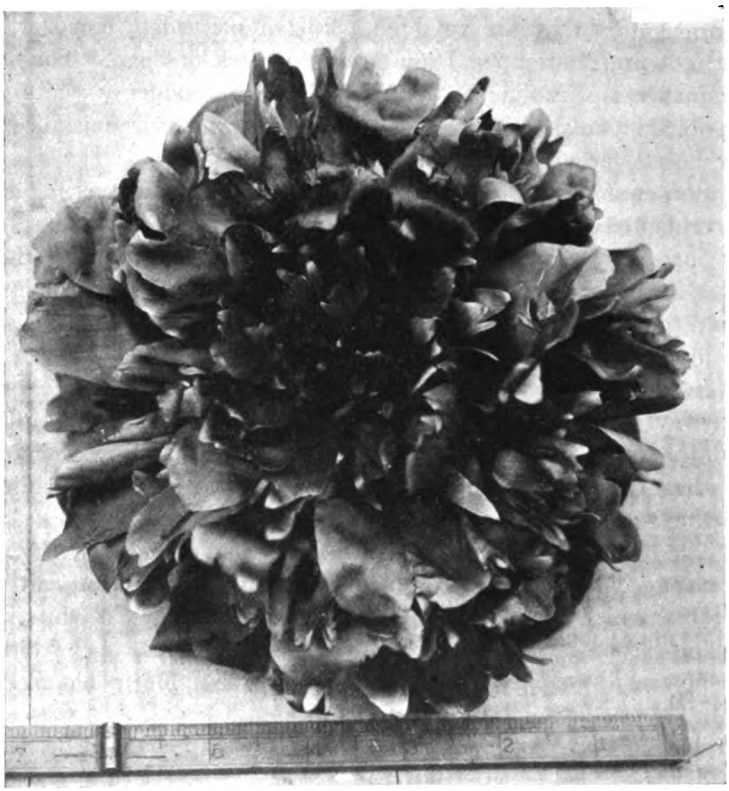
must be sown under a screen, and you must be careful to water them while germinating. I get four times as good a stand from summer sowing.

The *Campanula,* or *Canterbury Bells,* are very satisfactory. The Siberian Blue is very hardy and reproduces itself as rapidly as a common weed. Seed should be sown early in the spring. It blooms the year following.



Karl Rosenfield peony. Named after son of the originator.

Sweet Williams have been greatly improved of late years, and they give the best of satisfaction. Sow early in the spring and transplant in September or the following spring, or if not too thick leave in the seed bed.

The *Shasta Daisy* until recent years has been disappointing. Lately, however, there has been such an improvement that they are very satisfactory. To keep them true, they should be increased by division, but as this is not always practicable, you can get seed of the

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best and sow in the spring, and you will get some blooms in the fall. They are very hardy, and in wintering them you must treat them as you would Stokes' Astor.

Pyrethrums, or *Painted Daisies,* are very good. They are hardy and can be raised readily from seeds planted early in the spring.

Boltonias are about as satisfactory as any of our late flowers. They are as hardy as horse-radish, multiply rapidly and are in a glory of bloom when most other flowers have passed away. They do not seem to be widely disseminated yet. The white are in great demand for funerals and weddings. The others are lavender or pink—some larger than the white. The last of August they are in their glory. The plants are three to four feet tall and are covered with an immense mass of bloom which lasts for a long time. They are so large and strong they should be planted in the background. They multiply with great rapidity. They will grow from seed, but they have root divisions like the Iris.

The *Coreopsis* must not be forgotten. There are two sorts of these, but the most prolific bloomer for the size of the plant is the *Gaillardia,* which is loaded with flowers from spring till fall. Kelway of England claims to have 100 varieties of them, but I doubt if they much surpass the ordinary ones.

Veronica. This is quite a showy flower. The kind called the Blue Jay is very attractive. It seems to stand both heat and cold well. I bought a hundred plants. I think there is no trouble in raising them from seeds, however.

For rank growing plants the *Polygonums* are not to be neglected. These are called Mountain Fleece and are quite showy in the fall. They are propagated by division.

The *Bocconia,* or *Plume Poppy,* is very showy, having beautiful leaves of large size. I have not succeeded in raising these from seed. I suspect that they did not ripen fully before severe freezing. They can be increased by divisions.

The outdoor, hardy *Chrysanthemums* must not be neglected. I once secured a small collection of seventy-five varieties but unfortunately planted them too near some cherry trees, and the shade did not agree with them. Those nearest the trees died, those farthest from them lived, which showed they should have an open, sunny space. They are very effective, coming on usually after the first frost, and it takes a genuine freeze to check them.

Gypsophylla, or *Baby's Breath.* This is a native of the chalk cliffs of England. As the name signifies, it is a lover of gypsum. The flowers are very delicate, in spray-like form, and make a fine back-

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ground for bouquets of flowers. They are easily grown from seed planted early.

The *Hibiscus* should not be forgotten. These are usually white with crimson eye. Some are called the Golden Bowl, but this branch is not quite so hardy as the other, which grows on the banks of streams in Nebraska. They always kill down in winter and come up, like peonies, in the spring. Sow seed in May, and the plants will bloom the first year. I noticed a beautiful sport in some seedlings I raised. The flowers are a delicate pink. I am saving the seed and have raised several seedlings which come true to the parentage. I have never seen any advertised unless it is the kind called Militaris.

Hollyhocks are very easily grown; in fact, they will seed themselves. They spring up from the seed as it falls and make plants large enough to bloom next season. The grandest by far are the Allegheny Fringed Hollyhocks. There is nothing in the whole race to compare with them. They vary in color, are of large size, semi-double, and the stalks are often seven or eight feet tall. As a background, they are very effective.

I have thus briefly reviewed the perennials with which I am familiar and which I am sure will do well all through the Northwest. Minnesota for perennials far surpasses Nebraska, as the rainfall is greater, and the cooler air is congenial to the tender blossoms. When the siroccos are raging at 110 in the shade, it is not healthy for delicate blooms. Sometimes you grumble and think you cannot do much here, but right in grand old Minnesota you can pull down a section of paradise and live in it. You can fix up that dooryard and clothe it with the splendor of the star mantles and the gorgeousness of the rainbow. You can make your summers glorious in compensation for your cold winters. When I came here fifty years ago, Minnesota was the most beautiful spot on earth. It was a land of glorious landscapes and flowers. Men have killed the flowers to raise wheat. Now they should be put back again to clothe the state with more than pristine beauty. I am strongly tempted to come here and live myself, but I do not know with my seventy-five years whether I could bear transplanting. But I am doing the next best thing—having a branch garden at my old home, Paynesville, of this state, under the care of Frank Brown, where we are testing things by the thousands and find Minnesota all glorious in possibilities.

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Shelter Belts for Home, Orchard and Garden.

WM. A. BUGGS, WINONA.

It ought not to be necessary to produce argument in favor of planting trees for the protection of the farmer's family, animals, orchard and garden. Yet when one travels from county to county in our great commonwealth and sees what a lamentable lack of judicious tree planting is apparent, especially in our southeastern portion, then one feels like bending his energies toward the encouragement of such planting.

I have in mind five reasons for setting out an ample shelter belt, each of which it is necessary only to mention: 1. To afford protection to the farmer's family and domestic animals in the winter and in time of storm. 2. To provide a protected area in which to plant the garden. 3. The danger of fruit trees being destroyed by storms, blizzards, etc., is very great, and the drying out of the ground in unprotected orchards is common. Therefore the successful orchard demands protection. 4. Nothing adds to the beauty of a country more than to see well planted windbreaks around the farm homes. 5. The fuel value of the wood removed annually after a few years' planting.

The area included in the shelter belt should be not less than twenty rods by thirty rods, and larger if possible. The greatest mistake commonly made is to plant too near buildings. The size mentioned is large enough to provide room for the buildings, a garden, lawn, berry patch and a small orchard.

On which side shall we plant the trees? Well, the storms of winter usually come from the northwest, so our trees should be planted on the north and west. The hot, dry, killing winds of summer come from the southwest, so we need to plant on the south also. I see no valid reason why we may not complete the enclosure and plant on the east side also. On the area so enclosed one may grow more tender varieties of berries and vegetables and also of fruits than will grow in the open. I faintly realize the extent of our state from north to south and know the climatic contrast between the southeast and northwest and southwest. I know that all varieties that will grow in Winona county will not do well in Rock or Kittson counties. Yet the manner of preparing the soil and the *best* varieties to plant are the same in all sections. For this tree planting the ground should be plowed in the fall and better prepared in the spring than is usually done for corn. Some thrifty willow cuttings should be secured from

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a reliable Minnesota nurseryman, cut into six to ten inch lengths and planted a foot apart all around the enclosed area. These should not be "stuck" in the ground vertically, but should be planted slanting so that when covered with earth one may step on the cutting and pack earth firmly around it. Of all the willows, I prefer the "golden." A double row of these should be planted to protect the much more delicate varieties planted within. About two rods inside this willow hedge I would plant the shelter belt proper, leaving this two-rod space as a kind of snow catcher.

If one studies the method nature pursues in growing a forest, one finds that in a given forest there are growing at the same time many varieties of shrubs and several kinds of deciduous trees. One notices a mulch of leaves on the ground, also that grass is absent. Grass is an enemy to tree growth. In our planting let us follow the method of nature as much as possible. Several rows of trees should be planted eight feet apart, and the trees two feet apart in the row. At regular intervals plant the tree liked best and suited to the locality: e. g., an evergreen every sixteen feet. We must bear in mind that as these trees grow we shall need to remove most of them, and if we use judgment in the original planting we may leave the tree of our choice. I would plant liberally of the box elder, because of its hardiness, the ash for the same reason and because of its nature to do something in an alkali soil. The hackberry, elm, hard maple, basswood, or linden, because of the beauty of their form; the choke cherry, mulberry, etc., to provide food for the birds, and the best wild plums, blackberries and black raspberries to help cover the ground and to provide some fruit for the table. Many of our wild shrubs should be utilized also. Nut trees should be grown by planting the nuts where the trees are to remain.

Now our aim is to establish forest conditions. Then to keep out grass we must cultivate often. The first year we shall need to supply some mulch, either straw, manure or what is most handy. When trees begin to crowd some must be removed, remembering that it takes less time to cut down a tree than to grow one. If the planting has been done judiciously, then the cutting out may be done, leaving only most desirable varieties, which it would be hard to grow alone when small.

Be very careful where you get seedlings to plant. Buy only from reliable men and expect to pay a fair price, and if possible find out if the nurseryman uses good home or northern grown seeds. It is usually best to plant trees that are not too large and only two or not more than three years old. Such a planting will fill the requirements at the

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beginning of this article, viz., give protection, fuel and beauty. The amount of money invested is small, compared with results obtained and the blessings of the comfort obtained will be enjoyed by posterity.

Mr. Geo. J. Kellogg (Wis.): I would like to ask Mr. Buggs whether he advocates a shelter belt clear around the orchard. We do not want any shelter belt except on the windward side in Wisconsin.

Mr. Buggs: We want a shelter belt on the south because that is where the hot winds come from, the winds that dry out the ground, and we want it on the west and north for the protection of our buildings and animals, and that leaves the east only, and I do not know of any particular reason why we should not plant on the east. I do not see any harm in leaving openings in the proper places so that views may be had and for other purposes. I would plant out three or four sides, anyway.

Mr. Kellogg: If we did that we would be afraid of the blight.

The President: Where would you have your windbreak, Mr. Kellogg?

Mr. Kellogg: We must have circulation of air, or we get blight, and we do not want protection around the orchard except on the windward side. If you are going to include the buildings, if you are going to have protection around the residence, that is all right, but around the orchard we want a free circulation of air to protect from blight.

Mr. Kimball: Is there danger of the wind blowing the blossoms away so that the fruit will not set?

Capt. A. H. Reed: I find the only detriment from the wind is the blowing off of the fruit. In other seasons of the year, the more winds the better. I do not want a windbreak on the south, at least in my orchard. I think that it is encouraging the blighting of trees. We must have a windbreak on the north.

Mr. J. M. Underwood: Don't you get too much wind from the south and the west?

Capt. Reed: Let her come!

Mr. S. D. Richardson: The wind is so strong it blows the trees to the north.

Mr. J. F. Benjamin: I have had experience in setting out commercial orchards, and I have adopted the plan of setting out the golden willow in rows two feet apart, which causes them to grow quite close together, and there comes a time when they are a year or two old it will make a fence that scarcely any animal can get through. If a man wants to make it tight or make a permanent fence of it he can stretch a piece of net wire between the willows as he puts them in, and in time they will become fastened in that wire and will make a fence that no cyclone can tear up. I have adopted the plan of putting around the orchard two rows of golden willow.

The President: How far from the trees?

Mr. Benjamin: Twenty-five feet. That leaves room for the snow to lodge without breaking any branches. We must have some way of protecting the fruit, or we would not get any when it is ripe.

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I do not know of anything better than the golden willow to protect an orchard, and by the time the tree is ready to fruit you will have a good shelter belt.

Mr. A. J. Philips (Wisconsin): I do not know of anything better for the protection of an orchard on the north and west sides than a row of Malinda. You can get no apples from willows, but the Malinda will protect your orchard and pay for themselves too.

Mr. J. M. Underwood: I am very much interested in this paper on protection and windbreaks. I do not think there is anything of greater importance for the comfort of our animals and of the people living in Minnesota and Wisconsin. There are but mighty few places that would suffer from lack of wind by having a windbreak. I think the winds in this country will find their way through almost anything, and you will get sufficient air if you have a windbreak. You can travel from here to New York City, and I do not believe you will find five per cent of the homes between here and New York are protected from the winds and storms. A cousin of mine from New York state, talking about this subject, said they needed it there as much as any place in the world. A few weeks ago they had a wind that moved a straw stack from one farm to another, and they need protection as well as we do. Do not be scared for fear you are not getting wind enough; you will get enough and more, too. The only thing I am afraid of is that when the trees get large they will need more moisture, and they are so close together that they will die out. We have nothing about our place that I think more of than I do of our windbreaks, and the thing I fear now is that we have planted them too close. They are commencing to die; they are showing symptoms of weakness and sickness. There is nothing so good for a windbreak as evergreens. Willows are all right, but you want the evergreens if you do have the willows. I hope you will all plant windbreaks, not only to shelter your cattle and horses but to shelter yourselves. It is a great thing to have a nice shelter belt.

Mr. S. P. Crosby: I understand from the gentleman who spoke a few minutes ago that the willow is a fast growing tree.

Mr. Benjamin: I am not prepared to say just which would make the most growth.

Mr. Crosby: The first eight or ten feet, how long does it take them to grow that much, how many years?

Mr. Benjamin: Some I planted a year ago last spring are more than that; I know I can't reach the top.

Judge L. R. Moyer: About twelve years ago I set out eight thousand evergreens sent out by the Department of Agriculture. On the west of them I set out a row of golden willow for a windbreak. They were mostly Scotch pine. Those trees grew well. The Department said, plant them two feet apart each way, but I set them apart three feet and the rows six feet apart. They are so thick now that it is impossible to get through them anywhere. I would say in regard to pines that they grow faster than willows. The pines are now higher than the willows. If a person is going to plant a windbreak the best thing to plant is pinus ponderosa and Scotch pine. The former is a prairie

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tree and will not succeed perhaps in this climate, but if it does succeed in twenty-five years it will make the best windbreak.

Mr. M. L. Gjestrum: They are too hard to transplant, and there is too much loss. There is no reason why we should not recommend that which we know is all right.

Judge Moyer: Ninety-five per cent of those seedling pines grew.

The President: How big were they?

Judge Moyer: A foot high. I think you saw them.

Mr. Benjamin: I do not think it is advisable to plant evergreens too large. I would not advise any one to plant them over four feet high; two feet would be better. I have transplanted hundreds of them, and I don't think I lost one out of a hundred. I have planted Scotch spruce and ponderosa and have had no trouble whatever.

The President: Just a word of caution in regard to the ponderosa. I planted ponderosa twelve years ago and grew them eight years. I think the rows were eight rods long, and they were two feet apart in the row. About four years ago we had a winter in which those trees were very severely injured, and I took out all but two rows—all but enough to stock two rows—half of the rows remaining. I understand the situation is something like this, that in the case of the ponderosa it is sometimes difficult to get seed from locations where the climatic conditions are severe. The seed we get, much of it, is from sections where the climate is mild, and it is not reliable here. I have put my experience up to a number of nurserymen that have grown this directly from Colorado and other places, and that is what they tell me. This is just a word of caution.

Mr. Underwood: What do you mean by hardiness, or by the winter being too severe? Did it kill the top of the the tree? No. I want to tell every one of you that loses anything from strawberries up to pines and elms that if you ever get to the bottom of the thing and find out what is the matter you will find it is because they have not moisture enough. That is what is killing my trees; that is what is killing vegetation from strawberries up. I had five acres of strawberries—Mr. Elliot said they were the finest he had ever seen—they were worthless this spring and did not bear anything, and there was nothing the matter with them except they choked to death. That is what happens to all plants. It is not because they are not hardy. Our Scotch pine on the lawn are dying, our maples are dying, and all for lack of moisture. There is not enough moisture in the summer time, they are planted too thick, and they require more moisture than they get. That is what is happening to our evergreen hedges, and the best we have is the white spruce.

The President: In this experience the white pine is in the same condition.

Mr. S. H. Drum: I simply wished to say that I thought a shelter belt was all right, but the great trouble is that they are planted too close to the buildings and orchards. I have about two acres of trees around my place, on the south and west and north, and I have quite a few trees on the east. I have had to thin them out because they were

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killing my orchard, and since I thinned them out and put quite a distance between them I find my orchard is very much better.

Mr. Martin Soholt: We tried planting just a few trees around the house, and we planted cottonwood. Our first planting was too close. The best tree to plant outside of a grove is the evergreen. If we plant them out in the right way I believe they are just as easy to grow as the box elder or anything else.

Mr. A. A. Johnson: About young evergreens—I have cultivated them, and I have lost quite a few, but in our soil, in the southern part of the state, in Freeborn county, they do not cultivate them at all, they put them in the sod, and they have not lost as many as I have.

The President: What is your soil?

Mr. Johnson: Sandy.

The President: What did you plant?

Mr. Johnson: Scotch and jack pine.

The President: Did you lose any Scotch pine?

Mr. Johnson: Some.

The President: You lost jack pine?

Mr. Johnson: Yes, some.

The President: I think you will find that cultivation is better.

Orcharding on the Dakota Prairie.

G. A. TRACY, WATERTOWN, S. D.

An orchard to do the best should be cultivated frequently up to July and then mulched with manure, straw or anything that will cover the ground around the tree to hold moisture and protect the roots from winter-killing—but how many farmers will do that? As far as my observation goes, not one in fifty. I don't know of any orchards in my vicinity being planted for commercial purposes. The average farmer will plant from a half-dozen to twenty apple trees, a few plum trees and currants, and then he has so much other farm work to do the fruit is neglected. If they can't be cultivated, then mulch them as soon as set out, which is a short job. Then in two or three years give them another coat of mulch and cover the ground for some distance around the trees.

How long this mulching instead of cultivating will do, I don't know; I have only had experience in it twenty-six years. Some claim that mulch will bring the roots too near the top of the ground. I see but little difference in manure mulch or a dirt mulch; I know that either one will hold moisture, and that is what every kind of tree must have. The only substance they get from the ground is in liquid form, and if deprived of that the tree will starve and if long continued will

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die. My apple and plum trees are doing well with mulch. Currants I think do much better with mulch than with cultivation.

In 1880 I moved onto my homestead. Everything was new, not a tree or bush in sight. About the first of October I broke a strip twenty feet wide east of the house for a fire-break, that is, I tried to break it. It was too dry and hard to do much with it.

The next spring, 1881, I bought twelve apple trees, four Duchess, four Transcendent, four Hyslop, and planted them on that new ground. Some years later the Transcendent and Hyslop blighted so badly I cut them out. Two of the Duchess sun-scalded, the other two are now good healthy trees. The ground was never plowed or dug up anywhere near the trees, but I mulched them for some distance around. There was no windbreak to amount to anything for a number of years.

In the spring of 1886 I planted fifty more apple trees, a few plum trees and currants, and some small forest trees. I also planted ten acres to forest trees and tree seeds on my timber claim. The apple trees I planted only a few inches deeper than they stood in nursery. I cultivated the ground to potatoes. They made a fine growth that summer. I did not mulch them that fall. The next spring more than half never leafed out—they were root-killed—and nearly all the rest soon died. That learned me the lesson that apple trees must be set deeper in the ground and mulched.

In 1894 I planted apple trees ten to twelve inches deeper than they stood in the nursery, and for trial I set a few twenty inches from the top of the ground down to the first roots. Those deep set trees now have plenty of surface roots and are making a good growth and bore well this year.

Where trees cannot be thoroughly cultivated then mulch them plenty and leave it on summer and winter. What first gave me the idea of keeping the ground covered was that in the early days in breaking up the prairie where it had been burned over there would be patches not burned that were moist. The plow would slip along easy but where it was burned off it was dry and hard. I thought if that little grass would hold moisture it would be a good thing in the orchard.

My orchard is not large, but it furnishes our family all the fruit we want and some money besides. We have apples, crabs and plums to sell for cash, and with that money we buy winter apples and other fruit that we don't raise. I have the Hibernal, Patten's Greening, Duchess, Anisim, Wealthy and several varieties of crabs, planted in

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1894. None of them have been injured in the least by winter freezing.

I set apple trees one rod apart each way, but that is a little too close. One rod apart in the row and the rows twenty-four feet apart would be better. Plum trees twelve by sixteen feet is about right. Plum trees grow naturally on rather low, moist land, but they do well on high, dry land if well cultivated and mulched.

It is quite necessary to have a good windbreak on the north, west and south. There are some hardy apple and plum trees that will live

A PRAIRIE FARMER'S GARDEN AND ORCHARD AT N. O. P. SYNOGROUND'S, GROTON, S. D.
(Late president, S. D. State Horticultural Society.)

without any shelter, but they do better if protected from the blizzards of winter and the south winds of summer. I think, as the late Mr. Dartt said, to plant a tree away out on the open prairie alone it would die of a broken heart. Trees want company, the more the better. On the west and north of buildings and orchard there should be a good wide strip of forest trees, not nearer than eight or ten rods, except some scattering shade trees, but nearer on the south

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The native green ash is away ahead of any other tree for Dakota prairies in hardiness and in timber. The timber is as tough as Michigan hickory. I have ash trees that I planted the seed in 1882 that are now eight inches in diameter. They had no cultivation. The elm is the next best tree. Cottonwood and box elder are a little faster growing trees, but in some of the dry seasons a good many of them die. I like the cottonwood the best if planted some distance apart. The willow makes a good windbreak, but if set on high land they must be well mulched to be satisfactory. The reports of your state horticultural society and the bulletins from your state experimental farm will tell you what varieties do best in your locality.

About Seedling Apples.

WYMAN ELLIOT, CHAIRMAN OF AWARDING COMMITTEE.

Mr. Elliot: Now I have given the report, I am coming down to the real meat of the subject. I want to show you how we made the award and explain some features of it. This plate (indicating) we awarded first in the pro rata. While it is not as highly colored as these other varieties of the standard apple, it would bring as large a price at this season for the year with its keeping qualities. That is what we are after, the long keeper. That apple next May will show what its quality is. It is of fair quality now, but tough. For that reason we recommend that in all these varieties of long keepers the growers should furnish samples to a committee that should take them up in April and make another special award. That is the point we want you to clearly understand, that we cannot at this time make an award that is satisfactory either to you or to the public on a variety that is a long keeper and does not mature its quality until later in the season.

I can make no extended remarks on these varieties. Here is a cross with the Jonathan (indicating), and it shows up decidedly like the Jonathan in color and has also a very marked indication of Jonathan flavor. It carries out the theory that Mr. Patten has advanced here, that you can breed quality into an apple just the same as you can anything else, and you can also breed color, which he designated as second in value.

Here is another seedling (indicating) a chance seedling, presented by Mr. Philips. This has a high color. As a standard apple it is a splendid specimen, and it has a remarkably good quality, but it has not as good quality as that Jonathan seedling I showed you. It is a little earlier apple, and for that reason we gave it third in the pro rata.

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Here is a green apple (indicating) high in quality but off in color. It is a most excellent dessert apple, and at this season of the year we could not tell just what its quality is on account of its being a long keeper. It is a cross of the Patten Greening and the Seek-No-Further. It has the taste and quality of the Seek-No-Further very marked indeed, and it is going to be a fine apple.

You have called for the scorings—this apple (indicating) scored the highest. I might say a word right here as to the method of scoring. We went over all the varieties, and the committee agreed on the score. Then Prof. Hansen went over them and scored them as he thought proper. Then Mr. Wedge went over them and scored them. That apple I first presented to you, Mr. Brand's seedling, scored 95½ points in the final score. The first scoring was 90, Prof. Hansen raised it to 96, and Mr. Wedge raised it to 95, making the final 95½. That is the method we pursued with the other varieties. This Wilson apple scored 94½ points, and Phillips' apple 93, and the other one 91½, so the scorings as near as we could tell were very even.

Now if there are any questions to ask I will try to answer them, as I have not time to go any more into detail.

Mr. A. Wildwerding: Can you graft color in an apple?

Mr. Elliot: You can't graft color in.

Mr. Wildwerding: I believe that.

The President: Now I am going to call on Mr. Wedge to say a few words on this subject.

Mr. Clarence Wedge: I want to throw out just one word of caution to the members here about bringing in seedlings that are small. I think we must all realize from the fine show of well colored apples that we are getting in our seedling exhibits that the day of the little apple has gone by. Nobody wants them, the commission buyer will not have them, he will not look at them for the market if they are between a crab and a full sized apple, and in the home market nobody will look at them. They may have a nice flavor and be good to look at, but do not bring them here. They are an eyesore here. If you have them in your orchard and like them, that is all right, but don't bring them here.

In regard to the matter of color, a great deal has been said about color, but I think we can endure just one word more. When the commission buyer comes to your orchard to buy fruit the color cuts a great deal of a figure—but, after all, why should fruit not gratify the eye as well as the palate? It is perfectly legitimate to me. The fruit should be attractive in color, or else it will not attract the buyer. When we bring fruit on the table we want something pretty as well as good. So in all this breeding work in the production of our seedlings we should give color a prominent place. This little apple we put on the list as valuable for commercial planting. It is rather small in size, but Mr. Philips told us he sent that apple to the Chicago market and got five dollars a barrel for it last year, when the Wealthy was selling for $3.50 a barrel. It is of a beautiful color, which emphasizes the fact that

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color is a matter of a great deal of importance. If that was a green apple it would not be looked at.

While I am on my feet I want to say a word in regard to the Plant Breeders' Auxiliary. We want all that are interested in sowing seed to get into touch with us, and we want you to give us your names. Those of you who are planting seeds of different varieties of fruit, whether it be plums, apples or anything else, we want to get in touch with you.

Forestry Education.

PROF. S. B. GREEN, ST. ANTHONY PARK.

Forestry education is a very important matter just now and does not yet receive the attention its importance merits. I want you to think with me for a moment about the general matter of education in connection with the great changes that have affected society. It is evident that great reforms in any line must come through the rising generation. The ideas we get into the heads of young people at school will soon become effective. In the course of a few years the young people are the ones who will make the laws, and if you want laws enforced you must have a sentiment in the community that is in their favor. There is more that can be accomplished in this way than in any other in moulding public opinion. It is all right to try to reform persons of mature years, it is a duty we owe to them and to our country, but in my opinion little will be accomplished in this way in the matter of forestry compared with what will come from proper education of the young.

The people of Minnesota are handling their enormous forest wealth, and they have handled it, like spendthrifts; they have fooled away a large part of this great resource. It is of the greatest importance that we take care of our remaining forest wealth, because it has contributed so much and may contribute so much more to our prosperity if properly handled. But we foolishly work our forest wealth as we do our iron mines. We should work the forests as we do a farm crop, with the idea that there is going to be another one, but we work them like mines, which finally leaves nothing but great holes in the wilderness where there once was a mine. That is just the way our people at present regard our forests. It is going to cost a lot of money to put our forests in condition where they can be reproductive again.

One hundred years ago Germany was in the same foolish condition that we are in with regard to forest wealth, and, as one of the foresters there said to me a few years ago, "One could buy one hundred acres of forest then for the price now of one oak tree that was planted at that time".

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In various parts of our prairie regions there has been quite a lot of cottonwood sawed up that was planted by residents when they moved there. This lumber has sold at $22 per thousand and upwards and as a crop has paid well.

I want to illustrate this point of the value of education in such matters a little further. You will remember that some nineteen years ago there was no interest taken in agricultural education; our farmers were not friendly to it. But agricultural education has "made good". It has shown its wonderful helpfulness and has contributed very materially to the present desirable situation in rural affairs. Take the matter of dairying. At the time I speak of, you could perhaps count all the creameries in the state on the fingers of your hands. Now the number runs up to over eight hundred. They are great blessings to the communities in which they are located, and they have changed the whole aspect of agricultural conditions. It was education that brought about this change. For many years the farmer pooh-poohed at education for his special needs. The farmer then had to farm by main strength, and the idea of special education for the farmer was regarded with much skepticism, to say the least.

I do not need to tell you that the right kind of education in any pursuit is helpful, and the person who does not have it is handicapped in the great game of life. Education can do for forestry as much as it has done for agriculture. Thirty years hence, if we go at this thing in a broad, comprehensive way, we shall look back at our present record and wonder if these things could ever have been. I am just as sure of this as I am that the agricultural education which was started in this state nineteen years ago has been a good thing for the Minnesota farmer. I have been identified with agricultural education ever since I graduated from the agricultural college in 1879.

What should forestry education consist of? Should it be merely an education of the mind along general lines? Not at all. We must give to students in this line specific instruction; we must teach them the underlying principles of forestry that will enable them to grasp the practical details thoroughly and well. In order to do that we must have a demonstration ground, a great laboratory, i. e., a model forest in which the boys can get their experience. We must graduate men who are thoroughly familiar with forest wealth and its possibilities.

Last year you will recall we referred to the matter of getting a forestry school with facilities for demonstration purposes in the northern part of the state. We now have it at Itasca Park, and it cannot be beat. There is not a state in the country that has a reserve with the natural advantages for a forest school that are found in Itasca Park, and the situation is in every way desirable.

The question now is of means to make that the most effective school possible. I believe the next legislature is going to be a better legislature than the last; it is going to have more intelligent men in it, with more appreciation of these great matters, who will do something better for posterity in the line of forestry. I believe it will provide for the care of the forests. I will do what I can to help the members of

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the next legislature to understand this matter, and I want you also to help me so that we can get the matter into the most practical shape.

The state of Minnesota has paid forest bounties for many years. It is paying out now in bounties $20,000 for prairie planting every year and has done so since 1873, so that it has paid out over $600,000 in bounties. In my opinion it is not of any benefit in encouraging tree planting on the prairies and should be used in encouraging forestry in the wooded portions. The state ought to do as much for its great forest wealth, and the next legislature should see to it that this matter receives proper attention.

Next summer we propose to have a forest school in Itasca Park, and I believe it is going to be a success. We plan now to issue a little paper devoted to forestry at the university, which we will try to make the organ of the Forestry Association. I believe we can thus work up a clientage of intelligent people who will be a great power for improved forestry.

I have just spoken of these things as they have occurred to me, and I have taken fully as much time as I ought. This is a serious matter to me. I have put my life work into it, and after I am dead if it can be truly said that I got this forestry matter in Minnesota well started and helped it along effectively, I do not know of anything that would please me more. We shall probably see great improvement in forestry before I die. I don't know wnen that time is coming, but my chances are good for twenty to thirty years more, and if I have to go before that time there are others to carry on the work in good shape.

At the university we have recently extended and improved the forestry course. We have two additional professors, and we have about fifty students in forestry. They are clear-headed, bright young men, who are going to come to the front and help solve this great question. It is through these young men that this forestry question is finally to be settled. They are going to be the foresters of the future and manage our forests intelligently.

Mr. C. H. Harrison (Neb.): As president of the Nebraska Park and Forestry Society I bring you a greeting from your neighboring state and would like to say a few words.

While you have destroyed your forests we are putting in new ones. Nebraska is a prairie state. The United States government has in contemplation the planting of a half million acres. We are getting the jack pine from the northern forests and planting them. Fifteen to sixteen years ago a large portion of Nebraska was a desolate sandy waste, the land worth about one dollar per acre, but we found that the Minnesota jack pine planted there flourished and grew into a beautiful tree. They are making a growth of two feet a year, and the oldest planted are beginning to seed the surrounding country. It is such an easy thing to take one dollar and make it one hundred. These plantations have not been operated fourteen years, but the government experts say that the growing wood can be cut at the rate of fourteen cords to the acre. We find cottonwood pays as you raise it here. Cottonwood is bringing returns of from three hundred to five hundred dollars an acre. This is a question which confronts us all.

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SECRETARY'S CORNER

FRUIT EXHIBITS AT THE STATE FAIR.—Are you planning to make an exhibit in the horticultural department of the next state fair, which opens on Aug. 31st, continuing one week? If so and you have not received a premium list, you should address C. N. Crosgrove, Secy., Hamline, Minn., for a copy at once, so as to make early and timely preparations—and also address the writer, Secy. Latham, superintendent of that department. Any information desired as to the preparation and making of exhibits, etc., will be gladly furnished. There is plenty of room for new exhibitors, as each year some drop out for various reasons, so that a few years changes almost the entire personel. Very few are now exhibitors who were exhibitors ten years ago. Very liberal premiums, nearly $1,000, are offered for fruit exhibits, so that any one having a few varieties, making all the entries possible and handling the fruit carefully, is sure to find the returns ample compensation for the effort. Try it! It will be an education as well as a pleasure and a source of profit.

NEWLY LOCATED TRIAL STATIONS.—At the last meeting of the executive board of this society there were two new trial stations located, one on the farm of Seth H. Kenny, near Waterville, of which Mr. Kenney is appointed superintendent, and the other at St. John's University, near Collegeville, Rev. John B. Katzner, superintendent. Both of these trial stations are located where now for a long time considerable experimental work that is giving good results has been done, and our members have repeatedly heard through our monthly from the appointees, so that the work they take up in a formal manner has already been carried on for a considerable period informally. These gentlemen have both accepted their appointments.

KILLING DANDELIONS.—Prof. Henry L. Bolley, botanist at the N. D. Agricultural Experiment Station, has issued a bulletin in which he suggests a method of killing dandelions consisting of spraying the lawn with a preparation of two pounds of iron sulphate to each gallon of water. This preparation should be applied with an apparatus which makes a very fine spray, as large drops on the grass would injure that also. It should be applied two or three days after cutting, and the lawn should not be moved for at least two or three days after the spraying. Spray on a bright, sunshiny day, preceding pleasant weather if possible, as a heavy rain immediately following would destroy the effectiveness of the spray. This solution discolors clothing and stone walks. For fuller information send for the bulletin as above to Fargo, N. D.

A HORTICULTURAL SOCIETY AT DULUTH.—Under the auspices of the Commercial Club of Duluth, a horticultural society was organized in that city on June 11th, which has taken the name of the Northeastern Minnesota Horticultural Society. The officers of this new auxiliary are as follows: J. Kimball, president; C. P. Craig, vice-president; A. C. Jones, treasurer; A. B. Hostetter, secretary.

Prof. Green, our president, was present at the meeting when the organization was perfected, and talked to the gathering in his usual instructive and inspiring way. The city of Duluth and vicinity is fortunate in having this new organization, which will be found locally helpful as well as adding strength to the state society.

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PAUL NEYRON ROSE

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THE MINNESOTA HORTICULTURIST

Vol. 36 SEPTEMBER, 1908. No 9.

Hardy Roses.

CHAS. NORDINE, LAKE CITY.

Never before in the history of the north central states has there been such a demand for hardy roses as at the present time. It is perhaps a mistake to limit the assertion to any particular section of the country, because the general interest taken in the hardy, or out-door, rose in every part of our land is the best proof of its position as the queen of the garden in the estimation of all lovers of flowers. The rose has long held first place in the garden, and it will maintain that position as long as flowers are grown. It is undoubtedly true that no flower appeals to all people as strongly as does the rose.

There is really no secret in the successful growing of roses. The important essentials are soil, location, proper pruning, cultivation, winter protection and an understanding of certain insects and fungous diseases to which the rose plant is heir. A well balanced knowledge of these essentials is, of course, necessary. Failure to give proper attention to any one of them may mar the success of the grower's efforts, as they all combine to make the perfect rose.

As to Soil.—After experimenting with many different kinds of soil, it is my opinion that any ordinary garden loam will grow good roses if the location and drainage are right. The Hybrid Perpetual, or Remontant, roses thrive best in a stiff loam. An admixture of clay is of great benefit, as it retains moisture and keeps the soil cool. Good drainage is important, as roses will not thrive in a cold, stagnant soil, and care in this direction should be taken if the subsoil is not porous enough to drain away surplus water. It is not during the growing season that the improper drainage affects the health of the plant as much as it may in the early spring, when growth should begin. The visible effect will be a yellow appearance and tardiness in starting. They will often look as though they had been winter-killed. This is caused by cold, wet ground. Probably the roots were incased in ice during the last half of the winter. While this may seem a small matter, it is one

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of the things that should not be overlooked, as it has great effect upon the plants and the success of the flower crop.

An abundance of roses also depends considerably upon the location of the garden. An ideal exposure is one sloping gently to the southeast or southwest. The early morning sun is beneficial to rose plants, as they make more growth in the morning than in any other part of the day, even during the hot hours of mid-day. Therefore, if we had a number of sites to choose from we would take a spot sheltered on the north from the bleak, cold winds of winter and which would, at the same time, have plenty of warm sun during the early morning hours of May, June and July. A clump of trees or a hedge offers good wind protection, but they must be far enough away so they do not shade or rob the soil of nourishment.

Roses are gross feeders and should have good, rich soil. The observing grower will find that his plants very quickly indicate the condition of the soil. In a rich, well cultivated soil, when the plants are kept clean of insects and fungous troubles, the foliage will have a dark green color and be borne in luxuriant profusion. On the other hand, if the growth is weak and spindling, the foliage showing a yellowish hue—often more yellow than green—it is a pretty sure indication of poor soil, poor drainage or lack of sufficient plant food. Immediate steps should be taken to apply the remedy. Of course, I am presupposing here that the grower knows enough to give his roses water when they need it—and the appearance which often shows impoverished soil may mean also lack of moisture and lack of cultivation. Remember this always, that the care of the soil is of far more importance than any pruning, spraying or other attention you may give to the bushes above ground. Hoe or stir the soil frequently even if there are no weeds. The ground should never be allowed to get hard or baked. As soon after a rain as the soil is in good working condition, it should be thoroughly stirred. This will help to retain the moisture and stimulate root development. No work you can do will more amply repay the effort.

The pruning of garden roses should be done with care, with a mind to the character of each individual variety. All weak growing varieties should be cut back to eight or ten buds from the ground. On stronger growing varieties, such as Francis Levite, General Jacqueminot, Magna Charta, two feet of good strong shoots can be retained. When pruning, cut out all weak or old wood. Close pruning produces strong, vigorous wood, even on old plants. It also encourages shoots to come out from the bottom, thus laying a good foundation for next

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season's bloom. The number of shoots to be left will depend upon the strength and vigor of the plant. Always cut just above an outside bud. This makes a more open bush and admits sun and air more freely to the foliage.

A great many amateurs make the mistake of not trimming off enough wood. They have a fine large growth made the season before, and if wintered successfully there is a natural dislike to cutting off any of it. Very often, therefore, we see after pruning three feet or more of nice, vigorous branches are left, which make a good show; but when it is done in this way the stems of the individual flowers will be short and weak, scarcely able to uphold the weight of the blossom. You may get more blossoms, but they will be inferior. On the other hand, the closer pruning which I have just recommended may not make so large and handsome a bush, but it should produce larger flowers and on very much better stems.

Here in the north the element in rose culture that seems to concern us most is the matter of winter protection. With our increased knowledge this is not the bugbear that it used to be, yet, however simple the requirements, they must have proper attention in order to insure a fine display of flowers the next season. I find that dry straw or leaves make about the best covering material. Always remember that the most important thing is to keep the plants thoroughly dry. The covering should be done in the late fall, just before the ground freezes. Dig away a small quantity of soil next the plant on the side toward which you wish to bend it. Scatter about three inches of your covering material on the ground, bend the plant over carefully on this and cover about a foot deep with the leaves or straw. Round up the top and cover with tar paper or boards lapped so as to shed rain and melting snow. As we wish to keep the plants as dry as possible, it is often well to dig shallow furrows along the sides of the rows (if planted in rows), that we may drain off any surface water which would otherwise sink in around the plants. Remember, we do not cover roses to keep them from freezing, as rose bushes may be frozen solid without harm. Our object is rather, first, to prevent them from being alternately thawed out and frozen up with the rapid changes of our climate; and, second, to do this in such a manner that they will not become damp at any time while so protected.

As the season advances, some of our insect friends begin to get troublesome. Spraying with hellebore will destroy the rose slug. If aphis appear, they are quickly destroyed by a spray of nicotine; or if you have good water pressure a fine force spray with the hose will

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often destroy them. Hand picking is the only effective remedy for the rose bug. Dry sulphur dusted on the leaves during bright, sunny weather will destroy mildew.

Roses should be planted in the spring as soon as the ground is in good working condition. The beds, however, should have been well manured and deeply dug the autumn before. When the plants are received from the nursery, they should be unpacked at once. Trim back the tops so as to leave three or four strong buds. Also trim out any broken or bruised roots. Dig holes large enough to admit the roots without crowding, setting the plants about three inches deeper than they were in the nursery row. Firm the soil well around the roots and give each plant a good watering to settle the soil.

Garden roses are to be obtained, both grown on their own roots or budded on Manetti or other rose stocks. Most writers on rose culture recommend the amateur to buy "own root" plants. We should remember, however, that some varieties are not as successful on their own roots as when budded or grafted upon a stronger stock. This is the reason why nurserymen are compelled to bud certain varieties. The chief disadvantage in the budded rose is that suckers from the stock are apt to get a start and soon crowd out the budded variety. Scarcely one rose planter in fifty will notice the difference between the suckers and the growth of the true variety. In some varieties, it is true, there is very little difference, but the rose grower who gives any attention at all to the matter will soon distinguish the difference and promptly cut out all the suckers from the root. But, as said, the average amateur grower will allow these to grow up, and, being usually more vigorous, it does not take them long to over-run the bud. Of course this is all well known to those who are making rose culture a study, but it is recited here for the benefit of customers who have not been blessed with this knowledge and who take occasion to tell the nurseryman in very plain language what they think of him and the rose bushes he sells.

I presume I shall be asked what I consider to be the best varieties for general culture in Minnesota, and in anticipation I will name the following list of twenty varieties which I consider to be the hardiest and freest blooming garden roses for planting in the Northwest:

Baron Bonstetten	Countess of Rosebury	Margaret Dickson
Clio	Gen. Jacqueminot	Madam Gabriel Luizet
Alfred Colomb	Gen. Washington	Madam Mason
Anne de Diesbach	Gloire de Margottin	Frau Karl Droschky
Francis Levite	Jean Libaud	Paul Neyron
Capt. Hayward	John Hopper	Ulrich Brunner
Fisher Holmes	Jubilee	

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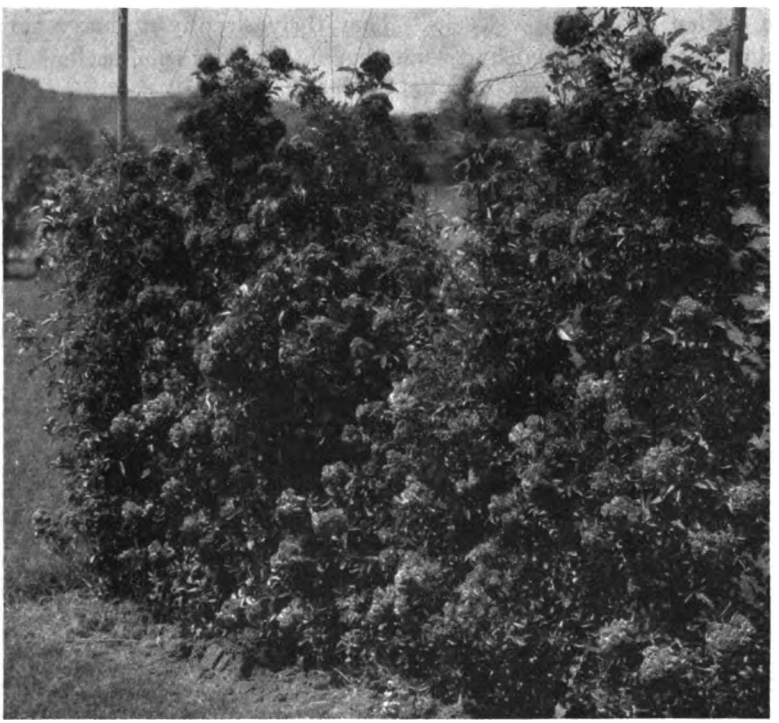
About ten years ago hybridizers and rose planters generally began to recognize the Rosa Rugosa as furnishing a new type of hardiness. They then began to use this class of roses by crossing them with different garden roses, thereby producing a class of varieties with a hardier constitution and better adapted to withstand our severe winters. This is naturally a slow process, as it takes about five years before the plants come into full bloom and the character and quality of their flowers can be determined. While nature has been lavish in giving us new varieties



A TRELLIS OF CRIMSON RAMBLERS

of roses by this process, very few of them are able to stand the first tests. The standard of quality in roses seems to have been improved until it has reached almost the highest point of perfection, and it is more and more difficult each year to produce varieties that bring in any marked improvement in beauty or hardiness. Seedlings from the Rugosa type have given us a new class of roses called the Hybrid Rugosas. The first variety to appear in this class was the Madam Geo. Bruant, now quite generally known and recognized as one of the hardiest varieties for northern planting. Later have appeared in this class

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such varieties as Conrad F. Meyer, Madam Ballou, Henry Gravereaux, Madam Labori and Madam Ancelot. When this class of roses becomes better known and more varieties are evolved, it is not improbable that they will largely replace the now popular Hybrid Perpetuals.

Great improvements have also been made in the Climbing Roses and among the Wichuriana, or Creeping, class. Among these and their hybrids are many valuable varieties which we use for nearly all the purposes in which a climbing or trailing plant is indispensable. These roses also usually bloom in July, thus prolonging the rose season in the garden two or three weeks. They thrive in any ordinary garden soil that is well enriched, and while they do not, as a rule, need as much protection as the garden roses before referred to, it is not safe to trust them through the winter without covering. Some of the best known varieties in this latter class are the Philadelphia Rambler, Dorothy Perkins, Manda's Triumph, Lady Gay and Debutante.

As one who has ever taken keen delight in the study and growth of this queen of flowers, and one who has watched with deepest interest the wonderful improvements that have been made in size, color and quality, I cannot refrain in closing from making an expression of this wish:

> May the development and perfection of the rose continue to bring forth varieties which will annually bring us nearer the time when we, in Minnesota, may grow roses in all the perfection and profusion enjoyed by our neighbors in more temperate regions!

Mr. S. A. Stockwell: What do you think of the scheme of taking a gunnysack and stuffing it with leaves around the bush instead of laying the bush down?

Mr. Nordine: I think I would rather bend it down if the bush was not too large; it will help to keep the plants at a more even temperature. I tried a little experiment along that line. I did not have time to lay them down, so I wrapped them with burlap and tar paper, and in the spring they were all black as though they had been frozen. I would bend them down on the ground and cover them up so they will keep dry and stay frozen all winter.

Mr. Stockwell: What objection is there to covering with earth?

Mr. Nordine: It is all right to cover with soil if you use some coarse litter on top to help shed moisture. This will also help to keep them from thawing out during a mild spell in winter or early spring. Sod cut three inches thick and laid grass side down is a very good covering material. The trouble is that most rose gardens are planted where there is no soil available to dig up to cover with.

Mr. Geo. J. Kellogg (Wis.): What is the best fertilizer?

Mr. Nordine: Good cow manure.

Mr. Kellogg: Better than horse manure?

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Mr. Nordine: Yes, it is a better fertilizer for roses.

Mr. Kellogg: Why is the Madame Plantier counted a hybrid?

Mr. Nordine: It is not; it is listed as a June rose.

Mrs. F. H. Gibbs: How would you distinguish wild sprouts from the true variety?

Mr. Nordine: The stock usually used for roots to bud or graft roses on is the Manetti. The leaf has from seven to nine leaflets, and the thorns are always bright red in color. You find very few roses that have more than five leaflets to a leaf, and with a little experience you will readily learn to tell the difference between the Manetti and the true variety.

Mr. Kellogg: How can we best get fall bloom?

Mr. Nordine: Most of our varieties are shy in bloom after the month of June. We have a few varieties that will give a good crop in August, and I have seen a few that will give flowers in September. After the blooming season is over if you will give the plants a little pruning and encourage them to make a new start in growth, you will be likely to get a good crop of blossoms in late summer.

Mr. Kellogg: Can you increase the blooming capacity by the use of fertilizer?

Mr. Nordine: By using fertilizers and good cultivation you will have better growth on your plants and will have more flowers and of finer quality.

Mr. Kellogg: If the June blossoms are cut off, can you make them bloom later in the summer?

Mr. Nordine: You would not get so many flowers later in the summer. I have seen finer flowers on Paul Neyron in August than I have ever seen in June.

Mr. Clarence Wedge: I was very much interested in Mr. Nordine's paper, especially the part that referred to that valuable class of roses, the Hybrid Rugosa. Of the Hybrid Rugosa I would like to ask which he regards the best in color, the white, pink or red, that are named, and the most desirable?

Mr. Nordine: We have but few varieties that I am acquainted with. The varieties are French varieties except the Madam George Bruant, which is a good rose, hardy and white in color, and the Conrad F. Meyer, light pink.

Mr. Wedge: Will it stand the climate without covering?

Mr. Nordine: It will not stand without covering, but they are much hardier than the average class of Hybrid Perpetuals. Among the red we have some that are dark red, and the best one is the Madame Labori. I understand Prof. Hansen has been working on this class of roses; perhaps he can give us something that will be of interest in that line.

The President: Prof. Hansen has worked on the hybrid tea rose, and we would like to know whether they would do better in Minnesota. Some of our members have succeeded in wintering the hybrid tea out of doors, and we would like to know whether he has succeeded in doing so.

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Prof. N. E. Hanson (S. D.): I do not know that I have ever lost them.

The President: The hybrid tea blooms all the season if we can only succeed in wintering it.

Prof. Hansen: I reported quite a showing of hybrids, and I think it is coming in line for us, but we have to go a good deal further before we find anything good in the Hybrid Rugosa. We have nothing as yet to take the place of the rose raised in the greenhouse. The past season we worked some four or five thousand Rugosa. I think we need a rose that makes an ideal cut flower.

Mr. C. S. Harrison (Neb.): I think the professor should mention the fact that he has been introducing the Siberian Rugosa, which would be vastly hardier. I have seen some that I think would withstand any amount of cold. Instead of covering them, cut them down to the ground. The rose grows on new wood and not on old. Mr. Atkinson had a large field of roses; he cut them all down in the fall and in the spring they came up, and he had a magnificent show of flowers. I had a singular experience with the Madame Plantier. I was connected with an academy, a girls' school, and they wanted white roses for commencement, but the Madame Plantier would winter-kill. One winter I laid it down like the spokes of a wheel and covered it with soil, and I said, "Now you stay there till spring." They were late coming in the spring, and they grew right up through the ground. They were late about two weeks, and every bud and twig was perfect absolutely, and the best of it all was that notwithstanding the enormous crop of roses, I had twenty-five to thirty bushes with fine roots, and it is exceedingly hard to root. There are two advantages in cutting roses to the ground and letting them grow up from the stem. I did that with a number with which we were troubled with winter-killing—and it also saved a great deal of trouble. I would advise you to try it.

Mr. Kellogg: I had mice cut mine to the ground, and that was the last of them. (Laughter.)

Mr. S. D. Richardson: We had a Methodist minister in Winnebago City who wintered all his roses outdoors. He cut them down in the fall, and he kept his in the ground when nobody else could keep them.

Mr. J. M. Underwood: A Methodist could do that, but a Baptist couldn't. (Laughter.)

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Breeding New Roses.

JOHN MONSON, MINNEAPOLIS.

For many years I have worked for my own satisfaction, as well as for commerce, trying to get a good rose, valuable as a garden rose in this northern climate and one that would be a good commercial rose for indoor growth. I have suceeded partially, but I do not intend to stop there; I am looking further toward a better result, and I think I see it not far ahead.

In breeding new roses one must have an ideal ahead of him, that is, you must not take some roses and mix up the pollen in haphazard fashion, trusting to potluck as to whether you will get anything worth saving. Get an ideal fixed in your minds. For instance, take a pink rose, note the different characteristics of the rose, the good points and also the defects, and selecting carefully the best flowers of that particular rose, pollenize it with the best other rose which excels in the particular point that your original rose was at fault. You may save a thousand plants from the seed so obtained, or you may get only three or four that are worth saving. But these few carefully preserved, and the flowers pollenized in turn, may perhaps give you just what you are trying to arrive at. If it does not, it is not for you to become discouraged, but you must begin carefully all over again. If Burbank had given up in despair at his first failure, or listened to the ridicule of his friends, we would not have the wonderful results we now have in the vegetable and flower kingdom.

In the garden, bees are a good crossing agent, and hundreds of these garden roses, so crossed or hand crossed, would prove a good thing, if taken care of properly, but from lack of experience millions of seedlings go to waste, and perhaps the very result that a student is aiming at has been passed by as worthless. In the house, keep the mother plants together for convenience in hand-crossing, and when you have gathered the seed from these carefully selected mother plants, put it in early—say in August—in an all sandy soil; watch it daily, watering freely, though it takes from nine to ten months before they will grow. Then watch for results and, as I said before, have your ideal before you and strive to cross such roses as will concentrate the good points of all in one.

If the law of inter-breeding be correct, gathering in pollen from closely related varieties only, then the law of heredity as applied to the animal kingdom would not hold good in the vegetable family. My suggestion would be to follow both lines of work, inter-breeding and

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promiscuous breeding, if I may thus put it, but always have in mind the design of a given improvement. Of late my one thought has been to select the most vigorous grower for the mother plant, for without health, vigor and a good constitution the finest new rose is a failure. I am thoroughly convinced by observation and experience that the mother plant has the most to do in giving health, vitality and constitution to the offspring. This being the case, we can see at a glance how important it is to select only the very strongest among

JOHN MONSON'S SEEDLING ROSE, "KATE MOULTON."

the ever-blooming varieties to serve as the female parent. We should select the pollen from those varieties that have pronounced qualities in the way of color, stem, length of bud and fragrance. If these qualities are present in the male, you may hope that they will have an influence upon your crosses.

With the increased vigor possessed by many of the later productions in tea and hybrid tea roses, such as Betty, Pharisaer, Killarney and Miss Kate Moulton, and others of like vigor, it need not be many

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years before a rare bred from such parents will give increased vigor over present existing varieties. The infusion of hybrid perpetual blood will also have a marked tendency to increase the vigor and growth of seedling roses, and by using the ever-blooming for the seed bearer, freedom of bloom will in large measure be preserved. If we get vigor of growth with certainty of bud and flowers on the ends of long straight stems, that will be the true type that will give us larger and finer flowers for our winter forcing as well as better varieties for our gardens.

I know that you will say that predictions of this sort are easy to make, but kindly indulge me a little. We must use every means to impress upon the minds of those just taking up this work that constitution is the foundation upon which all effort must proceed. We are surely making a steady advance under such men as the Dicksons and Paul in Britain; the Souperts, Pernet and others in France; Peter Lambert and his colleagues in Germany; together with Cook, Walsh, Hill and many others in this country. We have a right to expect even better results than those that have already been obtained. Let us study every available material at hand, remembering that nature's working theorems are to be discovered only by the painstaking application of the knowledge at hand, and no amount of speculative theorizing will take the place of intelligent, persistent experiments.

I think that you all should try to improve on this queen of all flowers and bring forth something of note in this country, something peculiar to our own race of progress and advancement.

Spraying Apples.

The conditions upon which we have been most successful as fruit growers, especially of apples, are spraying, thorough culture and pruning. Spraying is a success in every sense of the word, with the right material used at the proper time. We spray but twice, and our success is often 99 per cent. free from worms and fungi. Before we sprayed, some years ago, our apples were 99 per cent. wormy. Thorough culture covers many and far more valuable points in the fruit grower's success than is usually credited to a well-cultivated orchard. Our trees are grown with low bodies, ten to eighteen inches. We keep them well thinned out on north side, with south sufficiently open to admit sunlight, but not to sunscald large limbs. The expense of gathering the fruit from a low-headed tree is not half that on a high-body tree, to say nothing about the preventing of sunscald. The advised system of mulched orchards is not in any way satisfactory in the southwest. Thorough tillage, with fertilizing, is the watchword.—From Oklahoma.

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Varieties of Plums.

(A DISCUSSION.)

Mr. Johnson: What kinds do you recommend for planting?

Mr. Cook: O, almost any kind. The DeSoto has given as good satisfaction as any.

Mr. Johnson: How about the Wyant?

Mr. Cook: That is pretty good, but the DeSoto sells better.

Mr. Johnson: What of the Surprise?

Mr. Cook: I don't think much of it; it does not bear much down our way, and I have not heard that it bears much anywhere. I ought to have had several hundred bushels from my trees, and I never got over a peck from the whole business.

Mr. Johnson: That is my trouble.

Mr. Hager: In some places in Wisconsin they did wonderfully well with the Surprise, both in the quantity and quality of the fruit. It has come to me that they are the only plum for some portions of the country. In the southern part of the state we have orchards that are a commercial success. So before we condemn the plum we ought to consider the question of a possible difference in the soil and location. If you cannot grow them, it is likely you have not the proper soil.

Mr. Richardson: The Surprise has never done well with me.

Mr. Cook: When we got the plum rot the Surprise was affected by the rot—not the worst but very much—and it takes the blossom and kills it, and it dries right up on the tree. I have seen them on the tree a year after blooming. It is the plum rot, and if you live in a section of the country which is subject to the disease you cannot grow the Surprise, and it is the same with the sand cherry and the Compass cherry.

Mr. Johnson: Do you ever have any trouble with rot in a dry season?

Mr. Cook: I have not.

Mr. Johnson: It is a fungus, and it is produced in damp and rainy weather; those conditions are very favorable to the production of the disease. If we have a dry season we are not troubled with it.

Mr. Richardson: I never got a particle of it when we had rain.

Mr. Anderson: What makes the plums swell up?

Mr. Cook: That is the plum pocket.

Mr. Anderson: Is there a remedy for that? If you get the right kind of a spring you do not get any of those plum pockets, but some years the pockets will take the whole crop.

Mr. Cook: My experience is like that of Mr. Richardson's, some years we do not get any.

Mr. Anderson: How is the Cheney?

Mr. Cook: It seems that is the worst for plum pockets we have.

Mr. Anderson: We planted them out in 1893, and we have not had a good crop, or, I may say, only one real, good crop of the Cheney.

Mr. Richardson: I am going to cut most of my Cheney down.

Judge Moyer: What does the Aitkin do with you?

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Mr. Cook: You know what it does—it belongs to the northern class of plums.

Judge Moyer: I notice in the spring where we had had frosts just after the little blossoms were formed, they were full of plum pocket.

Mr. Cook: I don't know much about the plum pocket, but the professor says it is a fungus.

Mr. Richardson: It may be on account of the soil, but I never had plum pocket. When I was in Iowa the plum pocket took all of them.

Mr. Johnson: What is your experience with the Birchwood?

Mr. Cook: There are two, one is good and the other is worthless. One is a clingstone and the other is a freestone. There are some things about the plums we have not touched upon yet. It is the shothole fungus that does almost as much harm as the plum rot. It does not prevent the fruit from setting but prevents it from attaining any size. This year we had only a small crop of plums, and yet the fruit was small on account of this shothole fungus. Can anybody tell me what to do for it?

Mr. Johnson: Spray for it.

Mr. Cook: Tell me how much to spray.

Mr. Johnson: When it once gets into your orchard you have to spray more, but after you get it out you have to spray only once or twice a year.

Mr. Cook: What do you spray with?

Mr. Johnson: Bordeaux. That is a cure for rot, plum pocket and shothole fungus.

Mr. Cook: Do you use the usual strength?

Mr. Johnson: Yes, sir.

Mr. Cook: Will it not injure the foliage of the plum trees?

Mr. Johnson: No, it will not.

Mr. Cook: Will it stop the shothole fungus?

Mr. Johnson: Yes, I would have lost all my plums last summer if I had not sprayed.

Mr. Cook: Will it prevent plum rot?

Mr. Johnson: Yes, sir.

Mr. Cook: You people do not seem to be much interested in varieties.

Mr. Johnson: Talking about varieties, twenty-five or thirty years ago I started a plum orchard. We had no tree agents in those days,

Mr. Cook: Where do you live? (Laughter.)

Mr. Johnson: In southern Minnesota. When I found a tree that suited me in the woods, I dug it up and transplanted it, and I had plums all the time; but when I planted another orchard the tree agent was with us, and I paid seventy-five cents apiece for plum trees, and I have had no plums since.

Mr. Cook: Why didn't you go back and get the sprouts from your own tree?

Mr. Johnson: I should have done that, but I did not.

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Mr. Cook: I like the plum on its own root.

Mr. Johnson: So do I.

Mr. Richardson. If a tree is on its own roots, you can save the sprout and get the same thing.

Mr. Cook: There is a great danger in buying plum trees, and more danger in plum trees when you get them on tender roots. Where you buy them it is hard to tell what you do get. If you get trees grafted on Marianna stock, the chances are you will have no plums at all.

Mr. Richardson: Will it not make roots of its own if it is set deep?

Mr. Cook: I do not think so; I have had trees put down a couple of feet, and they did not do anything.

Mr. Richardson: I have a wild plum tree I used to have on the farm, and I brought it down and grafted it, and after it was four or five feet high I wanted to set it deep enough so it would not sprout. I dug a hole the length of an ordinary spade and set the tree in, and I never had any plum tree sprout worse than that. I believe that tree was set three feet deep.

Mr. Older: Why not top-work your plum on the wild plum?

Mr. Richardson: That would not make any difference because it was a wild plum in the first place. These wild plums, I do not care how fine a thing they are, I do not think they are worth growing. I have seen some of the finest varieties, and I do not think they amount to anything at all compared with our cultivated varieties.

Mr. Cook: If anybody wants to send me some for trial, I would like to graft them on wild stock.

Mr. Schutz: Why would not that be the best way to grow our plums?

Mr. Cook: It is; that is the way I grow them. I would rather have a plum that way than any other.

Mr. Schutz: Suppose you plant pits of the wild plum and graft them when they are two years old.

Mr. Cook: That is all right for the nurserymen, but it will not do for the farmer.

Mr. Anderson: Do you practice pruning plum trees?

Mr. Cook: Yes, to some extent.

Mr. Anderson: I find they split down.

Mr. Cook: After the tree gets to bearing I practice cutting out some of the wood; we get larger fruit that way. We get a large body and a small top, and in that way we get our finest fruit.

Mr. Anderson: Is it best to prune out the first three or four years?

Mr. Cook: No, I would not prune the first year, but after it gets ready to bear it is best to cut out one-third of the top.

Mr. Anderson: Would you cut to the body of the tree?

Mr. Cook: No, I would not do that, but I would rather cut a foot or so away from the tree.

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Making and Planting Apple Grafts.

D. M. MITCHELL, OWATONNA.

(So. Minn. Hort. Society.)

In my opinion the question of whether an apple tree is to be a first, second or third class tree depends to a great extent on how the graft is made.

The putting together of the scion and root, or making the apple tree, is a question that is very seldom discussed when we are considering a healthy or an unhealthy tree (I do not mean by a healthy tree that it must necessarily be hardy), but it seems to me that the first, if not the most important, thing that determines the health of a tree is how it is made and planted.

How many of you have gone through a block of three year old apple trees in a nursery and have thought, "Isn't it strange why there are so many grades of trees in one row of the same variety?" There are some trees that run 6-7 ft. high, first class in every particular; then there are some that run 4-6 ft., not as good; others that run 3-4 ft.; and some that are entirely worthless, or culls. I contend that the first grade tree is the best and healthiest—if the second and third grade trees are as good and as healthy as the first grade trees, why are they smaller?

I am of the opinion that if every graft had been made perfectly and planting had been done in the right manner, we should have had a far better stand of first grade trees. It makes very little difference what kind of a root is used. Some say, use only Vermont seed, others, French crab seed, others, seed from Northern hardy varieties, but whatever seedling apple root you use isn't it a variety you know nothing about until you have tested it, and after you have tested it you can never reproduce the same root for grafting.

We are all pretty well agreed as to the best kind of graft to make, which is a short root and a long scion—I would add, a very short root and a very long scion, and plant deep. The result will be an apple tree that has roots on the scion or, in other words, an apple tree on its own roots.

I think it makes far more difference where and from what we get our scions than from where and from what we get our roots.

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If our grafts are properly made and carefully planted, we have given the tree a good start; we have done, I contend, what is more difficult to do than to cultivate and prune it until ready for the purchaser.

Now just a word to the tree planter. Let us not for the sake of saving a very little on price, plant a second or third grade apple tree. A first class two-year old tree is not a second class tree although not as large as a three-year old, and I advocate planting a first grade three year old tree; neither is a second grade three year old tree a first grade two year old tree, even though it may, in some instances, pass as such.

Let us as planters who are looking for fruit insist upon a first grade tree, then those of us who are nurserymen will take greater care to make our grafts with more care, plant them as they should be planted and endeavor to produce more first grade trees. Nurserymen dislike to sell inferior, cheap trees, and if the demand is always for the very best more care will be taken in producing them. Nurserymen and planters are comparing notes, and gradually, without hardly realizing it, Minnesota is producing apples for the Dakotas. Raising fruit has become a part of diversified farming, and even though we do not all realize it Minnesota fruit is the best in the land.

Asparagus Culture.

C. H. FARNSWORTH, ALBERT LEA.

(So. Minn. Hort. Society.)

In selecting a desirable plot of high, porous soil with good drainage for raising asparagus, it is preferable to secure one sloping slightly to the south, with favorable protection from cold winds, so as to secure all the warmth possible from sunshine.

The Columbian Mammoth White is a desirable variety and prolific.

Asparagus, to be grown successfully in quality and quantity, demands excessive warmth, moisture and fertilizing. High culture is the key to success and profit. The means usually employed to accomplish this are to select strong, perfect, fresh seeds and sow in favorable conditions of warm weather and soil and transplant the one year old plants to east and west rows, not less than three feet apart, with half that distance

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between the hills, first enriching the soil to a high state of fertility with well decomposed fertilizer.

The transplanting should take place when showing a small growth in the spring and the plot given a coat of at least one inch of fertilizing weekly for several weeks later. A little more than an inch in depth is sufficient to set the roots of the plants below the surface if the compost is applied. No weeds should be permitted to grow, and the ground should be slightly raked often enough to keep the soil light. Light coatings of compost are advisable later when the season warms the earth. When the heat becomes most intense and showers less frequent, a very favorable practice is to rake the compost to the rows, making a slight trench between the rows and hilling up the plants lightly. Following this with liberal irrigation between the rows semi-weekly is productive of intense growth of excellent quality. When this has been continued for several weeks, until garden vegetables are in abundance, it is advisable to cease cutting and irrigating and permit the roots to mature and the tops to grow for seed. The seeds are reproduced only by the pistillate plants. The male plants will usually furnish fifty per cent more cutting annually than the others. No cutting of the plants is advisable until the second year, or one year after transplanting.

In the spring before the frost is all out of the ground it is well to scatter several inches of straw and litter over the older beds, and when it is dry burn it off to destroy the insects and seeds of weeds and to warm the ground. Following this warm water can be applied daily to advance the growth for earlier cutting. Too deep planting of the plants and heavy coats of fertilizer in the fall, unless raked off in the spring, will retard early growth in the spring.

Each season it is best to remember that nothing but warm weather is suitable for transplanting. Plants will be lost and stunted if the ground is not warm. The old "crowns" and roots die annually, and to create a vigorous growth there must be liberal fertilizing.

It is known that asparagus has many voracious insects enemies in the East but not otherwise. These are importations from foreign lands.

Connoisseurs do not regard the size of the branches of the cuttings so much as the quality of good fresh stalk.

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There is always a good market and ready sale for the choicest productions at remunerative prices. The culture of asparagus is more certain of liberal profits than any other garden product. An acre will produce not less than $200 worth in one season and at no fabulous prices. There is an increase of product for a few years from the seeds, and beds are of long life and good stock when fairly cultivated.

"Is there any pear that can be profitably grown in Minnesota?"

Mr. Philips: I do not think there is. There is none that can be profitably grown where I live.

"Is the dwarf pear hardier than the common pear?"

Mr. Philips: I think Mr. Patten can answer that question.

Mr. C. G. Patten (Ia.): I really know nothing about dwarf pears, but I would like to make a remark in reference to the first question. That is in regard to a pear that was sent to my place and to Ames some twelve years ago, perhaps fifteen, that has proven to be a better pear than any of the well known hardy pears in Iowa. It grows in the northern part of central Iowa—and I speak of this matter for the encouragement of those who would like to grow pears from the fact that it is exempt from blight. I think I may say that it is entirely immune from blight. It grows on black soil in which pears would be likely to blight, and I never saw a blighted twig on it, even where it stood right up against another blighting tree, and that blighted entirely to the roots, but there was no blight on this pear tree. It is a pear called the Fluke, and I believe it is one of the most encouraging things in the way of a pear we have.

The President: Does it fruit?

Mr. Patten: It has fruited with me for the last three years.

Mr. Richardson: Do you know anything about the Longworth?

Mr. Patten: I have some twenty-three years old. They do very well on high ground, and they blight very little, but they are not as good as the one I spoke of. Another is the Warner; it is free from blight, but is not as valuable as the one I mentioned. It was grown in the garden of a man named French, in Davenport, Iowa, but it will probably be known as the Fluke.

"Would fruit trees from Illinois be hardy in Minnesota?"

Mr. Philips: If I were to answer that question and I lived in Minnesota, I would say that I would not consider Illinois as a good place to buy trees.

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Fruits for the Home.

J. O. SHARE, LE ROY.

(So. Minn. Hort. Society.)

I can remember forty-two years back when a little boy and living in this county, that the fruits for the home were chiefly dark dried apples and dried currants, often mixed with a good deal of sand. But a few years later on, when the first railroad came through our little village, Le Roy, the supply of dried fruits became better both as to variety and quality, and when we could get evaporated red raspberries we did not wish for any better fruit for sauce.

Fresh fruits were also now year after year more and more shipped in from fruit growing states, home grown fruits being very scarce.

But late years the home grown fruits have taken the lead in the fruit supply for this part of our state, and when we now speak of fruits for the home we do not mean dark, wormy dried apples, nor dirty and sandy dried currants, but we mean for the early summer fresh delicious strawberries, eaten with or without sugar and cream; and then, even before strawberries are fully gone, we commence picking raspberries, the black, the red and the purple, and these will extend the berry season for a number of weeks. Dewberries and blackberries we can also have, although they are a little more difficult to raise. And to the home grown berries we must not forget to add the well-known red and white currants and the gooseberries. Then we have our good kinds of plums, apples and grapes. So there is no let-up to picking and eating home grown fruits from early summer until late in the fall—and with our late apples we can eat fresh fruits all the year round.

Beside the late apples our main supply of fruit for the winter and early spring is canned home grown fruits, and with these in the pantry we can even enjoy some fine shortcakes in winter.

All varieties of raspberries are easily and finely canned.

Strawberries are a little more difficult to can, so as to have them retain the right flavor and color. Of the different wavs we have tried to can strawberries, we have found this to be the best: Select choice berries. For each pound of berries, use a pint of sugar—but do not preserve more than two pounds of berries at a time. To each pint of sugar add a cup of water and a fourth of a teaspoonful of cream of tartar; boil until the syrup forms a soft ball when dropped into cold water, and then add the berries. As they heat, press down carefully

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with a spoon and let them boil five minutes after they have come to a full boil; remove the scum as formed, take from the fire and let the preserves stand twenty-four hours before canning. The berries will then be saturated with the juice. Can cold, filling the cans as full as possible. There is no danger of their fermenting, as so much sugar has been used.

Most of our home fruits can be used for jellies, and currants and grapes are two of the best for that purpose. Canned grape juice makes a very healthful drink and is frequently recommended for sick people. It also comes very handy to the cook for culinary purposes.

Residence of Mr. J. O. Share and vicinity, fronting on lake boulevard in Albert Lea.

The DeSoto and many other of our well-known plums are fine for canning, and especially the Compass Cherry plum is one of the best.

The raising of the Compass Cherry plum is about as far as we have got in cherry raising in Minnesota. It is true we are raising some Wragg and Homer cherries, but it is very few of them we can get as far as onto our dining room table. I think the time will come when new, choice and hardy kinds of cherries will be originated for this climate, and then we shall have plenty of cherries in Minnesota.

Our apple list for this state is both good and long, but we are striving to make it still better and longer. If I was asked by some one who has a limited piece of ground what three varieties of apples would be the most profitable to plant, I would say: Duchess, Wealthy and Malinda.

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In strawberries I have had the most experience with the Bederwood and the Crescent, and have found them very satisfactory, but I have an idea that the Warfield and the Sen. Dunlap would be my first choice of those I have tried. With raspberries I am so far satisfied with the Loudon, the Older and the Columbian. Among the gooseberries I have found the Downing and the Pearl to be all right.

There is no trick in raising grapes in this part of the state if we know how, and it is easy to learn to know how. In fact

A COMPASS CHERRY IN FULL FRUITAGE.

it is easy to raise any of the fruits mentioned, even if one has only a small piece of ground.

The conditions for raising good fruits are indeed many, but two of the most important ones are to have the soil greatly enriched and to keep the weeds out.

The benefits of raising fruits can not only be estimated in dollars and cents, but we will also have to take into consideration the pleasure and healthful outdoor recreation they give.

What can be more pleasant a sunny morning in May or June then to be working in an orchard among birds and bees and breathing the perfume from blossoms on bushes and trees, and then picking the fruits as a reward for our labors—fruits which will make our mouths water before we eat them, knowing they are fresh, clean and wholesome?

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Shelter Belts and Timber Lots.

E. F. PECK, AUSTIN.

(So. Minn. Hort. Society.)

How many of you have your homes protected from the intense heat of midsummer, and the severe, biting, chilling blasts of winter, by reason of a friendly belt of timber or a timber lot, either natural or artificial? How many of you consider it room well spent and a permanent improvement that enhances the value of your home?

Well and good! All I want is a few unimpeachable witnesses and a competent jury, and I can win this case in any court. The other fellows, those that haven't these things, know their value as well as you do, but for reasons sufficient for themselves have not taken advantage of the benefits to be derived from this knowledge.

It is to them I bring this counsel: plant trees! Why? Sanitary reasons alone would be sufficient inducement if the Almighty had in addition to knowledge also endowed you with the instinct of the lower animals.

Plant trees! It will bring into the blighting, blistering heat of noonday the cooling shade of eventide. It will temper the cutting edge of winter's north wind's blast. As a temperature regulator, a belt or grove of timber has no equal. It affords protection from the sudden climatic changes that in this blizzard belt are prolific of more sickness and disease than any other known cause. You know this without telling, but lack of instinct has kept you from applying the sovereign remedy. As a money-making and money-saving proposition, it is worth your consideration.

Now listen! At the present rate of vandalism, a very few years will witness the utter destruction of the lumber interests of this country. And, mark you, their work is not confined to the lumber forest trees, but the tie and post and charcoal and pulp industries are nothing less than appalling. A moment's thought is sufficient to take in the real situation.

Some of you are denying yourselves some of the pleasures of life that you may leave more money to posterity—and it is going to take a lot of money to hire the railroads to haul coal to them when the state's woodyard is cleaned up for good. The gas man may pipe posterity's premises very reasonably, but hold-up

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prices will be placed on the stuff that lights and heats. It will be a ground hog case worked out to a demonstration. Plant trees!

"Happy indeed is he who lives upon the natal soil he loves,
And sits beneath his old ancestral groves."

I am exceedingly sorry to say that this happiness is the lot of but few of us. Our fathers were too deeply absorbed in the work of clearing away the forest to think of appreciating their beauty or to take the time to plant trees to take its place. They

A Loudon willow windbreak at Mr. Peck's place. From a photo taken three years after planting as cuttings, some of the trees being twenty-five feet high.

waged a war of extermination, but it is not yet too late to begin to remedy the effect of their indiscriminate clearing.

Plant trees! If we cannot sit beneath our "old ancestral groves" except in rare cases, we may stand among those of our own planting and learn to love them, and die in the hope that our children's children may enjoy their protection when we are no more.

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Plant trees! It don't take long nowadays to live ten years. In that time, and less, you, on the farm, can get into position where you need no courtesy from the coal carrier or the gas man. As far as fuel is concerned you can be independent. Yes, and the building material problem will be solving itself while you wait.

Go out to "Evergreen Farm" and take an object lesson in what has been done with the conifers, or pine family. I speak particularly of these because, up to within a few years, they have furnished the building material of the country. And here is something more worth considering. Southern Minnesota climate and soil is adapted to the successful growing of almost every kind of timber. I can name over thirty varieties growing natural on "Riverview Farm." All exceedingly hardy, in fact it is all second growth timber. The only way to kill it is to take it out by the root and crop the land.

I have a great deal of respect for the cottonwood. It makes good dimensions, and it and the willow will flourish in the waste places on the farms that have never yielded a dollar profit. And some of these places are getting pretty large.

Thirty years' time will grow on one acre of average Mower county soil 10,000 feet of cottonwood lumber. It will sell for $20.00 per M. today, or $200.00, and leave you enough fuel to pay for cutting, hauling and saw bill. This means $6.67 per year rent for your land while you wait.

Plant trees! Get into a shelter belt of some kind—no matter what you plant you will be advised that you should have planted something else. Suit yourself.

It is estimated by the best geologists that the world's supply of coal will last but fifty years. Suppose we put it at one hundred and fifty years. That is but a little while. Then what? You can't regrow coal. God Almighty has ordered that if we behave ourselves, this earth shall be the home of hundreds of millions for centuries to come. How can this be unless we regrow the forests to make the fuel and building material? The coal, the oil, the iron, the cement, the rock, will go, and not one of them can come back, for they can not be restored by man.

Plant trees! It is the loftiest patriotism that I can conceive to plant woods and groves for those that come after us.

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A Few Thoughts About Orchards.

S. D. RICHARDSON, WINNEBAGO.

(So. Minn. Hort. Society.)

A few years ago Mr. Sackett, of Fairmont, had many of the vines in his vineyard root-killed, either wholly or in part, and what seemed strange to him was that the bottom roots of many vines were killed while the surface roots were uninjured. We have had the same experience with our apple orchard. Will some wise horticulturist tell us if cold and wet will kill roots deep in the ground the same as cold and dry will kill surface roots?

We often hear it said that ground that will grow a good crop of corn will grow apple trees successfully, but I only partially believe it. I believe that whatever the character of the surface soil that a well drained clay subsoil is one of the essential things in the successful growing of apples. I should not hesitate to set a few trees on any ground where garden truck can be grown but should not want to set a large orchard on anything but a well drained clay subsoil. Trees can be successfully set in sod or in old orchards where there is plenty of room to let the sunshine in. It is not necessary, but is better to dig the holes in the fall. Dig big holes deep enough to set the trees from twelve to eighteen inches deeper than they grew in nursery. Trim the bruised roots with a sharp knife and cut off half the previous season's growth. Use surface soil and work it well in among the roots, taking care to have them in shape as they grew before. Fill the hole about half full and pack very firmly with the foot. Do not be afraid to use plenty of muscle and boot-heel. If the ground is not moist enough fill the hole up with water and when it soaks away fill again until the ground is as wet as you want it.

A man near here set 100 trees one of those dry years that we had a few years ago. He dug deep holes, four feet square, set his trees, filling the holes partly full of dirt, and then took a threshing machine tank and gave his trees all the water they needed. It is needless to say his orchard was a success.

After watering fill the holes not quite full of dirt and mulch heavily. Before mulching, a tree shield made of wire mosquito netting should be wrapped around the tree. It is a cheap and effectual protection against mice. Strawy manure makes a good mulch, but sometimes near the house well rotted manure looks better

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When the summer and fall are very dry, newly planted trees should be thoroughly watered before the ground freezes. Trees in sod should be mulched every year if a good growth is desired.

In the Wisconsin Agriculturist, of November 22, 1896, there is an account of an experiment conducted in Ohio for six years to test the comparative value of the different methods of caring for the orchard. On one plat, clean culture was given in spring and early summer, followed by some kind of a cover crop; on another plat the ground was given clean cultivation the entire season; on another the trees were planted in sod, the ground cultivated in a circular area of some three or four feet around the tree, the grass between the trees was mowed and allowed to lie where it fell; on the fourth plat the trees were set in sod and heavily mulched with straw after enclosing the body of the trees with wire screen to prevent injury from mice. The grass in this last plat was mowed and raked up around the trees for a mulch three or four times each year.

The result of the six years' trial has been that the trees set in sod with mulch have borne double the fruit and made the best growth of all of the plats; the clean cultivation and cover crop was next; the sod with clear cultivation around the tree was next, but was the most costly of all of the methods tried; the clean cultivation was the poorest of all, as the ground washed so badly that frequent fills were necessary, and this method was abandoned at the end of the fourth year. True this was in Ohio, but I have seen enough of sod and mulch and of clean cultivation in Minnesota to convince me that the same results would follow a like experiment here.

Nine-tenths of the orchards in Faribault County are in sod, and but few of them are mulched. At the last meeting of the horticultural society Wm. S. Chowen, of Minnetonka, told us how he had planted four orchards in the last fifty years, had given them the best of care, and they had blighted and died. Others near Minnetonka have found that they can grow trees in sod and escape blight in a large measure. Never saw a Wealthy grown in sod killed by blight in Faribault County.

Prune trees when young with a sharp knife, removing all limbs that interlock. Get the idea of what you want your tree to be firmly fixed in your mind and prune accordingly. Remember that a tree must have plenty of leaves to make a good growth. A few limbs can be removed from a tree at any time without injury, but the removal of many leaves in summer hurts the tree and will sometimes kill it.

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Before setting an orchard look over some of the oldest apple trees in your neighborhood and see how much room they occupy and make calculation so that in your orchard you will have sunshine to color your fruit and room to gather it. Trees set the distance apart that they should be when large look, oh, so far apart from each other when small.

Soon we shall have to do something to control the codling moth. It seems that there are two methods that are effectual, one by spraying and one by having something to eat up the fallen fruit, turning them out from the orchard when necessary. We have insect friends as well as enemies, and the liquid death we spray with does not discriminate between them.

Plum and cherry trees do not need to be set as deep as apple trees unless they are budded or grafted on tender roots, when they should be set deep so that they will root from the scion.

R. E. Hynson, of Mankato, in a paper read before the Minnesota State Horticultural Society in December, 1903, claimed to have solved the problem of how to stop the ravages of the curculio. He planted his plum orchard sixteen feet by twenty, so as to give it plenty of sunshine, and cultivated it twice while in bloom and as often as he did the cornfield afterward. Whether this plan would work the same elsewhere could only be told by trying it and remembering that manuring should go with cultivation.

I have been trying cherries for the last twenty-two years with indifferent success. The past few wet years have been hard on cherry trees. Perhaps deep tile drainage would help solve the cherry question. Have some young Homer cherry trees and one early cherry, bought for Louis Phillippi, that are doing well. The birds take all the early cherries, but by having plenty of trees and a grove of Russian mulberries some years we get plenty of cherries.

Farmers raise large crops of corn, wheat, etc., because they love to and use the proper means to accomplish what they desire to do. So with fruit raising. When men love to raise fruit and use the proper means, they will raise plenty of it, for apples and plums can be made a profitable crop in Minnesota.

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Farm and City Life Compared.

DR. A. H. STREET, ALBERT LEA.

(So. Minn. Hort. Society.)

There is a great difference between farm and city life, and I believe the farmer has the advantage, all things considered. The average business man of today, unless he has attained a competence, is worked harder, has more worry and makes less money than the average intelligent farmer. The latter is raising good crops and marketing them at high prices. When he hauls his load to town, all buyers are anxious to purchase at the best price they can afford to pay, the various banks show a kindly interest in him when he is ready to deposit the result of his sales, and the merchant is not backward in his endeavor to sell him goods at prices that will at least be as low as his competitors.

Then there is the fresh air, the blue sky, the singing birds and the babbling brook for the summer; the getting together in the winter at the neighboring houses, the parties, weddings, agricultural, dairy and horticultural meetings—all of which broaden the view and conduce to his prosperity financially and otherwise.

The average farmer who is reasonably free from debt certainly does not have the worry of his city brother, who wonders in the fall how trade will be, and who waits until January 1st to find whether or not he has lost or made during the year.

The farmer today, through the medium of the telephone, rural mail delivery and daily paper brought to his home, is in close touch with the world, and his leisure time during the winter gives him an opportunity to familiarize himself with such subjects as interest him, an opportunity that the average business man must snatch after a long and hard day's work at the store or shop.

So let us be glad that fate or chance has guided us to the farm, and let us there enjoy that contentment that should be our portion.

The farmer's wife is hard working, frugal, and contributes her full portion to the work. She does not have to worry over style, can wear loose, easy fitting clothes, and usually discounts her sister in the city in the matter of health and happiness.

When it comes to raising children, you can do that on the farm and save them from the hundred and one temptations of town life, so that they may grow to maturity strong physically and clean morally, and then if they go to the city they have a chance of winning that the average city man does not enjoy.

I could never understand why so many country boys prefer to leave the farm and move to town, working for small wages, but this is a separate subject in itself, and I will not attempt to settle it at this time.

We are all seeking health and happiness, and I am sure we will find the farm gives us the opportunity for both that we could not find in the city.

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Selecting Seeds.

ROBERT C. WEDGE, ALBERT LEA.

(So. Minn. Hort. Society.)

This is a subject I am deeply interested in and anxious to learn more about, a subject that is of great importance to the nurseryman, not exactly the selecting of seeds, but the variations in the different kinds of shade, ornamental and evergreen trees, which, of course, are governed largely by the seed. A man growing trees as a business, as a nurseryman does, should know not only, for instance, that this is elm seed or that is ash seed or the other is Norway spruce seed, but he should know also where the seed came from and from what class of trees.

Take for instance a block of elm grown from seed which was picked up any old place where it could be had easily. Of course there is a bare chance of getting a fair per cent. of straight trees which can be delivered, but we find that the chance is very small for a really profitable block, the trees being crooked, slow growing and many of them bending so badly as to make it hard cultivating them. So we have for a number of years selected seeds from trees that are of the type we want, straight—and with straight growth almost always goes quick growth. Of late we have been talking of grafting elm so as to have a still larger per cent of good salable trees. However, I do not believe this will pay. There is perhaps no other tree where the variations are more marked than in the elm, but in all these is more or less variation, in many cases of course not enough so that it would pay to select seed from individuals.

There are so many things to take into consideration. I have already spoken of straightness and quick growth; besides this some individual trees are troubled with insect pests, while others are not. We find the European white birch is more pronounced in this respect than almost anything else. Not many years ago, we had a block of birch, part of the trees coming from one place and the rest from another. All were European white birch, and stood side by side, but there was almost as much difference in the two sides as there is between the European white and our common American white birch. One lot had large leaves, were more rapid growers, and it took the bark a little longer to turn white, but they were not troubled with the leaf hopper as the others were, and I believe gave us twice as many trees which were fit to send out.

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I have already said that quick growth and straightness usually or, rather, very often go together. In the same way scrubbiness, or slow growth, and hardiness go together. It is well known that the northern types are usually the slower growing, crooked and scrubby sorts.

Seed of the Scotch pine gathered in Finland produces trees that hold their color finely, but are so slow growing and scrubby at first that they are not profitable for the grower and do not please the customer. However, I believe if a person would wait long enough, they would make the very best windbreak for this country, standing the cold and winds better. Then there is a type which grows on the Baltic shores, which is considered about the fastest grower—but, as I have said, these fast growing sorts are often not very hardy. So in growing trees we have to select some type which will be straight and quick growing enough to please the customer, and yet fairly hardy and profitable to grow.

Now I might mention a lot more of the special characteristics of the individuals in the different species, but I have not aimed to cover the subject but simply to bring this up as a matter of thought. I know we are altogether too apt to think of the divisions in plants as absolute and not, as they are, mere artificial divisions made simply for convenience. We should remember that there is often almost as much variation in individuals in a specie as there is between species, and I sometimes think even more, not only in the plant kingdom but in the animal kingdom. Ask an old, experienced hunter or trapper what the difference is between the coyote and the wolf, and he will tell you he does not know, they run in together to such an extent. Why if in breeding animals they find it pays to carefully select individuals should it not pay us to do the same with plants?

"Is the European larch better than the American larch, or tamarac?"

Mr. Philips: I should think it was for a timber tree. The tamarac grows better in swamps.

"Are not both the European and the American larch naturally better adapted to moist places?"

Mr. Philips: I have never seen the European larch growing in moist places as does the tamarac, but I know it is a fine grower on high land.

Mr. Kellogg: We took the American larch from swamps and planted them on prairie soil, and they did remarkably well. At the same time we planted the European larch on a sandy knoll that would not raise beans, and they did well on that sandy knoll.

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Necessity of Spraying.

J. M. LINDSAY, AUSTIN.

(So. Minn. Hort. Society.)

It is not enough that you buy a fine tree, plant it well and see it well started—you must care for this tree.

There's a farmer in this country whom you all know. Some years ago he planted an acre with potatoes and looked forward to the harvest, but the potato bug came in all his glory and made a wilderness of the field.

"Let him eat on," said the farmer, "I'm raising potatoes not leaves."

But when the harvest time came he had no potatoes.

The second year he planted potatoes and also set out an orchard of apple trees. The potato bug came, but he killed them with Paris green. The caterpillar came and made his home in the branches of his apple orchard and destroyed the leaves, but the farmer said:

"I'm raising apples, not leaves."

Then the apple tree borer came and made gimlet holes all over the trees, but the farmer didn't mind for he said:

"I'm raising apples, not firewood."

You all know what this man's apple crop amounted to.

I said that you know this man, and you also know his neighbors and his neighbors' neighbors, for there are thousands of farmers who sprinkle their potatoes for the Colorado beetle, sprinkle their cucumber vines for the striped bug, the cabbage for the worms and strew poison under vegetables for the cut worm, yet all these farmers will buy apple trees and expect them to withstand the attack of an army of creatures, from the microscopic scale to the tent catapillar.

It is for this reason that I want to talk to you about the necessity of spraying trees.

I am not going into the details of spraying, for none of you here but are familiar with the work, and some of you have had far more experience on the subject than I have, but I wish to speak of the importance of the work and to call your attention to the fact that a man will take the greatest care to suppress the Colorado beetle on his potato field, which may yield him $100 per acre and yet neglect his apple orchard which will bring from $300 to $500 per acre.

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We are slow in taking up this important work, and I want to urge every one to get ready this winter that we may be ready to carry on the fight with vigor throughout the season.

The average farmer expects the birds to keep his trees free from the destroyers, and yet he will permit the destruction of those very birds which are his best friends. The time has come when the farmer must help the birds do the work, and the only help must come through the use of poison.

My experience in spraying the orchard is not of great extent, but the conditions and results noted may contribute something of practical bearing to the general fund of information.

Spraying is a necessity. Every year the codling moth damages the fruit crops of the United States to the extent of from $30,000,000 to $40,000,000.

This is one of the most troublesome insects yet found with which fruit growers have to contend, and to destroy this as well as other insects spraying must be followed, using a poisonous solution.

This spraying should commence just before the buds open, then again just before blossoming time, and the third time just after the blossoms have fallen.

Now those remedies must be applied in a timely way: for instance, spraying to be of any use must begin before the eggs are laid, or rather frequent applications should be made during the entire period of egg laying, from the middle or last of May possibly as late as the middle of July. Above all it must be remembered that "an ounce of prevention is worth a pound of cure."

There are different remedies for spraying, Paris green, London purple and Bordeaux mixture, the latter being in use the most.

As spraying in this way would kill any other insect pest feeding upon the fruit tree leaves or buds, plum trees infested with plum curculio should receive the same treatment as apple trees. I would suggest, however, using a little more slaked lime in Bordeaux mixture, as the plum foliage is more tender than that of of the apple.

A safer spray than Paris green and one that is rapidly coming into favor is arsenate of lead. This can be used of most any strength, from three to six pounds to every 100 gallons of water without injury to the trees, and it remains on the leaves and fruit longer than Paris green.

This is also a most excellent remedy for canker worm and codling moth. Early in the spring before the buds of the plum trees open they visit the orchard and eat the tender parts of the tree, such as green bark and buds; later they eat leaves, flowers and young fruit. Knowing this habit we can kill large numbers of the curculio by spraying the trees before the leaves and flowers open.

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Plant Breeders' Auxiliary, Secretary's Report, 1907.

CLARENCE WEDGE, SECRETARY.

The secretary of the Plant Breeders' Auxiliary is pleased to report reasonable progress in that important arm of our state society during the year 1907. The membership for 1906, amounting to seventy, was increased to one hundred and sixty-five, and the quantity and quality of work done also showed a gratifying improvement.

On November 15, 1907, the following questions were sent to all members of the auxiliary:

1. What seeds have you sown during the past year with the hope of improving our present list of varieties?

2. Have you planted anything with the view of future cross-pollination? If so, what?

3. Have you done any hand-pollination, and with what varieties and results?

4. In what particular qualities are you hoping for improvement by the above work?

5. What other matters of interest have you to report?

To the first question we received forty-one replies, which showed seed had been planted as follows: Twenty-nine had planted apple, three crab, six plum, three peach, one raspberry, one sand cherry, one grape, one blackberry, one high bush cranberry, one rose, two peony, one perennial phlox, one lilac and one chestnut.

The most popular apple to grow seedlings from has evidently been the Wealthy, of which variety ten members have planted seed. Four have planted Patten's Greening seed, and a like number have chosen to plant seed of the Northwest Greening and Malinda.

In answer to the second question, four members have planted plums for cross-pollination, three apple and one small fruits. The plum and sand cherry cross seems to attract considerable attention, probably on account of the success made in several notable cases in the past. Two have planted long keeping apples in connection with hardy varieties. The interest in this method is certainly on the increase.

Answers to our third question showed that eight had made hand crosses, the stone fruits attracting chief attention, although both the apple and the rose are being subjects of experiment. This is quite an increase over last season's work, which is doubtless due largely to the lessons given so efficiently at our annual meeting.

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It appeared from the answers to the fourth question that, as reported last year, hardiness is the quality most commonly sought. One is working for an apple that will hang to the tree till ripe. Many have a long keeping apple in view, and one is seeking to produce a rose that will combine the foliage of the Rugosa with a double blossom.

Very few replied to the fifth question. John Penny, of Polk county, Wis., is evidently sowing many seeds, and in that northern latitude reports 150 large trees in bearing and unable to supply the demand for fruit. Peter O. Vangen, of Climax, Minn., reports a cross of Massasoit with the wild grape, fruit the size of Beta, but of inferior quality.

While we are gathering numbers, experience and enthusiasm for the important work of plant breeding, it seems desirable that we should open a record book to register the pedigrees and performances of our productions, to be used as a basis for future work. Our president, Mr. J. M. Underwood, has made some suggestions along this line which after more consideration may be reported for discussion and adoption at our next meeting.

It is gratifying to notice that, while the efforts of our breeders are largely put upon the apple and plum, the other things are gradually attracting due attention. The nuts native to our section show great natural variation, and invite selection and crossing to produce kinds that would be of commercial value. The possibilities in the hazelnut seem especially evident. Of best quality and very productive, it needs only size to make it the equal of the filbert, and some wild forms found in our fields lack but little in this particular. What they would do under cultivation, we think, has scarcely had a trial. Our native walnut might be crossed with the best English varieties, and perhaps produce a variety superior to either. We do not know but that the native hickory of Southern Minnesota may be susceptible of as much improvement as our Southern horticulturists have made with the pecan.

Very few of our members seem to be working with the grape, which is one of the easiest and most needed subjects that could be chosen. Hand crosses can be made with the greatest ease, and results obtained in a comparatively short time, probably within three years from the time the work was done. The vines take much less room than the tree fruits, and there is no field that offers richer material from which to select stock for breeding purposes.

The rose offers a particularly inviting opportunity for the amateur, especially for women, as there is not only a wealth of material to begin with, but a most pressing need of hardy varieties that will bloom

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throughout the season. Whatever may be said of the merits of our so-called hybrid perpetuals, like the General Jacq., Paul Neyron, etc., there is not one in ten of our average planters that will succeed with them. A hardier and healthier race is greatly needed, and can easily be had by introducing the blood of the native rose or the Rugosa, preferably the latter, on account of its freer blooming habit. This flower is one of the easiest to manipulate. The blooming season extends over weeks instead of days. As with most of the fruits, the space occupied by the parent plants and seedlings brings it within the limits of a small garden, and the time of waiting for results is only two or three years instead of ten to fifteen, as with the apple. This field of effort in plant breeding offers, therefore, so many superior advantages that we hope to see it more fully occupied in the near future, especially as we have an auxiliary society organized for the special purpose of exploiting this queen of flowers.

Annual Report, 1907, Southern Minnesota Horticultural Society.

CLINT. L. LUCE, ALBERT LEA.

As a representative from the Southern Minnesota Horticultural Society I am supposed to make some report of the work of that organization and the interests it represents. As the members of the state society all know, the Southern Minnesota society is an auxiliary of the larger one and works along similar lines. The society has a membership at the present time of sixty, and they are scattered over four counties, viz.: Fillmore, Freeborn, Mower and Steele—but Freeborn has by far the largest number in the list, The society holds annual meetings in January of each year, and they are usually well attended and very beneficial to all who attend. There is always a good display of fruit, mostly apples, and many varieties are represented. At the present time A. W. Massee is president and O. M. Peterson, secretary, both well known horticulturists of Freeborn county. The next meeting will be held in Albert Lea, and arrangements are already in progress for making it even more of a success than usual. There will be attractive premiums and a program of more than usual strength. Everything points to a very successful meeting with an increased attendance. The society has always done good work and could have accomplished much more had it not been hampered for want of funds, but its success in spite of this handicap proves the fighting qualities of its members. There seems to be an excellent field for these auxiliary

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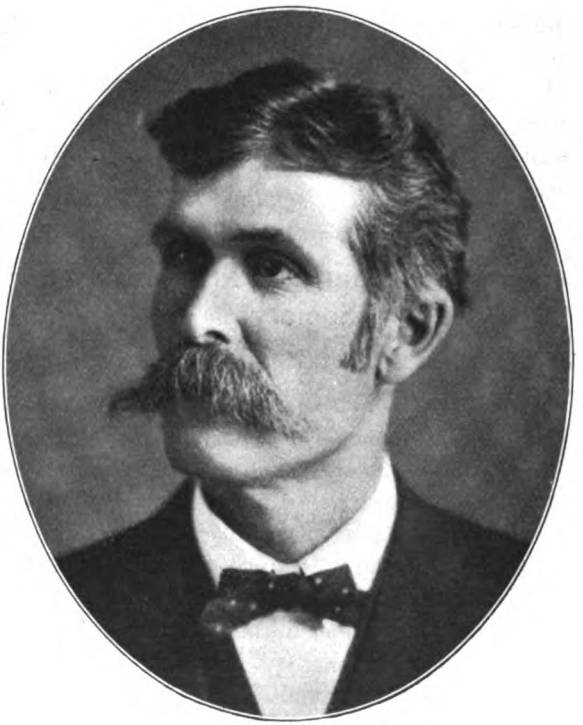
societies, and they can accomplish work along lines that are closed to the state society. In my own county, Freeborn, there is a healthy county society that is constantly stirring up interest in horticultural topics, and it virtually takes charge of the fruit department of the county fair and holds an annual strawberry feast that is a very pleasant social meeting.

The past year (1907) was quite a prosperous one for the horticultural interests in the territory covered by the Southern Minnesota Soci-



Clint. L. Luce, Albert Lea.

ety, as several of the varieties of fruit raised bore bountiful crops, and the prices that prevailed were fairly good, especially as to apples, as the light crop in the large apple districts of other states was somewhat marked and made the demand heavier than usual. I was unable to get reports, except in a general way, from other counties, but in Freeborn the horticulturist had his inning this year. The strawberry crop was very large and ripened so gradually that the season was much longer than usual, and the price was better maintained in consequence. The local market was well supplied, and some were shipped out. Larger

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areas will be planted to strawberries in this locality, and heavy shipments to other parts of the country may be expected in the immediate future. The demand seems to be greater than can ever be supplied.

In the raising of apples Freeborn county has long been ahead of any other section in the state, and much of this credit must be given to a man who has more than once been president of the state society and is a warm and enthusiastic supporter of the Southern Minnesota Society. I refer to Mr. Clarence Wedge, of Albert Lea. This year over twenty carloads of apples were shipped out, and the buying and shipping of apples is becoming a regular business. Indeed the industry has attracted so much attention that a representative of the fruit trust was in Albert Lea the past season in search of goods, declaring the fruit raised there to be of a very high grade. The planting of apple trees is being rapidly advanced in the county. Many young orchards are just coming into bearing, and others have just been planted. Within the next half decade the shipment of apples from Freeborn county will undoubtedly be quadrupled, as farmers are engaging in the work as a business and not simply because some solicitor has coaxed him to purchase a few trees.

Another point in favor of the Southern Minnesota Society, and that is, it has always done excellent service in encouraging the growth of seedling apples, and there have been some excellent varieties produced by its members. The White Russet, the Frudenlund Sweet and the Highby plum are excellent examples of those originated by amateurs, while Mr. Wedge has quite a variety of seedlings, many of them being of excellent quality. These new varieties are being thoroughly tested as to quality of fruit, prolificness in bearing, hardihood of tree and other qualities necessary to make a valuable fruit for this latitude, and the time may not be so very far distant when some member of the Southern Minnesota Society will claim the reward offered by the state society for the ideal winter apple. Much more might be said about the seedlings of the district, but this will suffice. While most of the above refers especially to Freeborn county, the facts will in almost all cases apply with equal force to all the counties represented in the Southern Minnesota Society.

All in all the Southern Minnesota Society seems to have a bright future, even if some of the fruit growers are inclined to be lukewarm. There is work for it to do, and the annual meetings can be made more and more interesting and profitable if all interested will thoroughly co-operate. Every county in the state should be in one of these district societies, and to do still closer missionary work there should be an organization in each county—then only would the real fruit and nature lovers come into the most complete mutual association and consequent encouragement.

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Questions and Discussion.

Is the catalpa speciosa from an Illinois nursery hardy in Minnesota?"

Mr. Philips: I have had no experience. The question of catalpas came up here the other day, and it was said it is too far north to raise catalpas. There are several varieties of the catalpa. The first acquaintance I had with Col. Stevens was at Rochester, and he told me there were catalpa stumps at Lake Minnetonka that had been growing there for many years. He was very enthusiastic about the catalpa.

The President: That proved to be a mistake. The catalpa is found native only in a very small district and borders on the Wabash river in Indiana. Am I right or wrong? I refer to the catalpa speciosa.

Mr. C. G. Patten (Ia.): I refer to the home of the catalpa in the paper I am to read before the society, in which I offer what I know about the catalpa.

"Can it be planted with a view to growing it for fence posts, telephone poles, etc.?"

Mr. Richardson: From my experience with it in Winnebago City, I should say it is too slow a grower. It grows quite fast for a time and then stops there. A good sized catalpa is very ornamental, but they do not seem to increase in size. We have them growing there, but they are small.

The President: I measured a tree just before I came up to this meeting which was planted five years ago, and it measured six inches in diameter four feet from the ground. It grows fast enough with me. I have lots of trees I could cut for posts that were planted on my place five years ago.

Mr. Philips: The Rock Island road plants the catalpa along its right of way to use for ties.

"*Would it be profitable* to plant the larch for fence posts in Minnesota?"

Mr. Philips: On my heavy clay soil the larch is a good grower.

Mr. Kellogg: In Rock county I put out about three thousand trees about thirty years ago. I have trees there now that are big enough for saw logs, and they run from seventy-five to eighty feet high.

Mr. A. B. Lyman: Is that the European larch?

Mr. Kellogg: Yes, sir.

Mr. Lyman: We had European larch twenty-five years old, but they seemed to die during the dry weather we had a few years ago.

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Premium List, Annual Meeting, 1908.

All exhibitors are urgently requested to make their entries with the secretary at least a week before the annual meeting.

All exhibits must be in place by noon of the first day of the meeting to be entitled to compete for premiums.

Exhibitors competing must be members of this society and growers of the articles exhibited.

The rules governing the horticultural department of the Minnesota State Fair will be applied except where they conflict with this list.

Note specially—Undersized, decayed or otherwise imperfect specimens of fruit should not be exhibited.

GRAPES

	1st. Prem.	2d. Prem.	3d. Prem.	4th. Prem.
Each variety shown	.75	50.	25.	....

APPLES (not including crabs.)

Each variety included in the 1908 fruit list of the society, or in the 1908 premium list of the Minnesota State Fair	.50	.40	.30	.20

Collection, not to exceed ten varieties ..... $20.00, to be divided pro rata.

Peck of any variety of apples, the fruit exhibited to be at the disposal of the meeting. An exhibitor may enter a peck each of as many different kinds as he pleases ..... $50.00, to be divided pro rata.

Topworked Apples

Collection of named varieties grown on scions top-grafted on other trees. Accompanying the name of each variety, shown on the same label (to be furnished by the management), must be noted the name of the variety on which it is top-worked. Fruit to be retained by awarding committee to test comparative keeping qualities and reported on later ..... $25.00, to be divided pro rata.

Competition is open in same territory as with seedling apples.

NUTS

Each variety of edible nuts, 1 quart	.50	.40	.30	.20

SEEDLING APPLES

Five specimens (not less than 2½ inches in diameter) must be furnished of each variety exhibited.

Entries of seedling apples can be made only by owner of the original tree or his sole authorized agent.

Competition in seedling apples is open also to the western half of Wisconsin, the northern third of Iowa, and all of North Dakota, South Dakota and Manitoba.

Premiums will be divided pro rata among all entries commended by the judges according to the comparative merit of each as a commercial fruit.

Before payment of premiums awarded on seedling apples, a history and description of the tree and its fruit must be furnished to the Secretary.

Competition is open to all except on such varieties as are being propagated for sale by some person other than the originator.

EARLY WINTER SEEDLING—The fruit shown must not have been kept in cold storage ..... Premium $40.00, to be divided pro rata

LATE WINTER SEEDLING—Same conditions as for early winter seedlings except that if found necessary the fruit shown may be retained and final decision reserved till later in the winter ..... Premium $75 00, to be divided pro rata

In each of the above two classes the varieties receiving the three highest awards will be designated as having received the first, second and third premium respectively.

BUSHEL BOX of any variety of apples ..... $25.00, to be divided pro rata.
These boxes of apples to be sold Friday afternoon for benefit of Gideon Memorial Fund.

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SECRETARY'S CORNER

THE MEMBERSHIP ROLL.—At this date, Aug. 20th, the annual membership roll for 1908 stands at 2590, adding to which the life membership roll of 204 makes in all 2794. A good many memberships have come in lately which on account of our inability to furnish the 1908 report have been put upon the roll for 1909, which already stands with thirty-six members upon it. The Horticultural Society should certainly have a larger issue of the bound volumes of the annual report, but to secure this it will be necessary to ask further assistance from the state legislature.

AN EXCELLENT EARLY PLUM.—Samples of an early ripening plum were received in this office from Chas. G. Patten, Charles City, Ia., on Aug. 20th, which Mr. Patten says is a seedling of the Whittier probably crossed with the De Soto; a handsome red plum, an inch and a quarter in diameter, of excellent flavor and no astringency. It should be, as he notes, an A. No. 1 family plum. Mr. Patten has shown for a number of years handsome seedling plums as results of the crossing work he is doing, and some of these would seem to be well worthy propagation for the general market.

SUGGESTIONS FOR THE PROGRAM.—The program for the coming annual meeting, to be held the first week in December, probably in Minneapolis, is now in process of construction, and suggestions in this direction from the membership are earnestly desired. What topics would you like to have presented at this meeting? What demonstrations would seem to you advisable to have made, and upon whom shall we call to do this service? What visitors from abroad would it be especially interesting to have with us? Correspondence with the secretary along these lines is desired, and as far as practicable suggestions will be acted upon, though of course in many cases circumstances will interfere somewhat.

SPOKANE "NATIONAL APPLE SHOW."—The national apple show advertised for the second week in December at Spokane, Wash., is offering $25,000 in prizes. A large portion of this we understand to be for apples. Exhibits of apples are solicited from all parts of the country, and where the exhibitor cannot be present to set up the exhibit himself the management undertake to do it. Minnesota ought to be able to place some fine exhibits in this collection of some of her best varieties and perhaps seedlings. Those who are interested in this subject may secure a premium list and personally correspond with the management, if desiring to do so, by addressing H. J. Neely, National Apple Show, Spokane, Wash. Minnesota surely ought to get some prizes out of th s national apple exhibit.

LIST OF PREMIUMS, WINTER MEETING.—On the page preceding this will be found the list of premiums offered for displays of fruit at the coming annual meeting. Please note carefully what there is that you can exhibit, and store fruit accordingly, either in your own cellar if you have a good one, or in the cold storage of A. Booth & Company, Minneapolis. The unusually poor fruit crop of the present year will require a special effort to put up as good an exhibit as we have made for a number of years past, but indeed WE WANT IT BETTER, and more and larger premiums are offered for this purpose than ever before. Don't fail to save all the fruit possible to this end, and help us to make the coming exhibit the crowning one of our annual gatherings.

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HORTICULTURAL HALL, MINNESOTA STATE FAIR, 1908. VIEW TAKEN FROM NORTHEAST CORNER OF THE HALL.

1. Geo. Redpath, Wayzata.
2. E. D. Cowles, West Concord
3. Stuart Elliot, Minneapolis.
4. F. E. Cutting, Byron.
5. Geo. W. Yerxa.
6. Thos. Redpath, Wayzata.

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THE MINNESOTA HORTICULTURIST

Vol. 36 OCTOBER, 1908. No. 10

Horticulture at the Minnesota State Fair, 1908.

A. W. LATHAM, SEC'Y.

Brilliant skies and a balmy air exemplified the unrivaled climate of the North Star State at its best at the annual gathering of the Minnesota State Fair the first week in September, 1908. Six consecutive days of bright, sunshiny weather, with the splendid lay-out in all departments and an attendance in excess of any previous years, enables the state fair to establish a new record in every direction.

The horticultural department, in which we are specially interested, showed at its best. Evergreen decorations, clusters of evergreen branches, with great festoons of evergreen roping, against the white beams and posts supporting the roof of the building and around the outside walls, made up a decoration exceedingly satisfying to the eye and setting off at their best the fruits and flowers shown beneath. In a general way the decorations were as previous years, but some changes had been made which appeared to be in the line of improvement. A very good idea of the way this work was carried out can be secured by examining the accompanying engravings showing partial views of the interior of the hall.

The exhibit of apples, both in quantity and quality, was well up to that of any previous year. While the fair was a trifle earlier than last year, the fruit shown was considerably more mature and better colored, though the dry weather of the last few weeks interfered somewhat with its attaining size. The number of exhibitors, on account of the freaky bearing of Minnesota orchards this year, was less than usual, but those who did show made up in quantity what was needed to take the place of the absentees, and they were especially well repaid in the division of premiums for their unusual effort.

There were four exhibitors of general collections of apples in the professional class and the same number in the amateur class. There were nine collections of apples of twenty varieties each, eleven of fifteen varieties each, and fifteen of ten varieties. In all there were shown

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in the hall 3,025 plates of apples, not including apples exhibited in the county exhibits, which amounted to 570 additional plates, altogether 3,595.

The plum exhibit was an exceptionally gratifying one, as so few plum orchards are bearing this year. There was shown of single plates of plums ninety-four, including nearly every cultivable variety in Minnesota. There were eight collections of plums of fifteen varieties each, and seven of ten varieties, and twenty-four seedling plums, a number of which were of good quality. Seedling plums were shown, not in competition, however, from Mr. O. W. Moore, of Spring Valley, a good Japanese hybrid of excellent quality, firm and handsome; also several very fine plum seedlings from Chas. G. Patten, of Iowa.

The grape exhibit was also very much of a surprise to us, and larger in quantity than for some years, there being shown in the collections 178 plates, and altogether on the grape table 380 plates. Of course most of these varieties were very unripe, some of them not having changed color at all. It is impossible to make a display of ripe grapes at that season of the year. Were the fair held two weeks later a magnificent show of grapes could be made, as Minnesota rivals in the appearance and quality of its grapes any state in the union. This applies equally well also to the apple exhibit, which is necessarily a very inferior one compared to what it would be if the fruit were to remain upon the trees a fortnight longer. The wonderful shows of fruit made at the Minnesota State Fair years ago was largely on account of the lateness of the fair, but causes partly climatic and partly to do with the circuit of fairs to which the Minnesota State Fair belongs, have made it advisable and necessary to hold the fair at an earlier date.

Five plates of pears were shown, three of which were from Houston County and two from Minneapolis. The fruit exhibit sums up in Agricultural Hall to a total of 4,369 plates.

Horticultural hall was well patronized by the immense crowd that visited the fair, and the many expressions of delight with its appearance may well be taken as the true expression of sentiment as to this feature of the state fair. Wide aisles, tables loaded with handsome fruits neatly kept, a beautiful display of floral plants as a framework against the outside walls of the building, with the wonderful showing of cut flowers, floral designs, etc., varying from day to day, made horticulture at the fair a continual delight.

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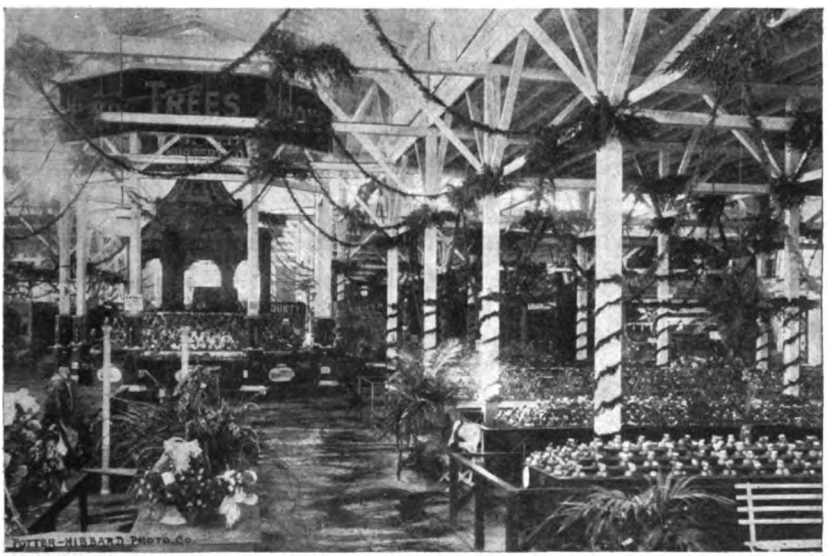
Although a very unfavorable year for growing flowers there were more than enough to fill the tables used last year for that purpose and three additional new ones. There were five decorated tables set up by the florists on Thursday, all very beautiful, and on Friday four designs of floral wreaths, which were made in the highest style of the art by some of the leading florists of the Twin Cities.

The forestry department of the state university, under the charge of Prof. S. B. Green, occupied the northeast corner of the building with a unique forestry exhibit, intending to attract attention especially to the school operated in Itasca State Park during the summer months. Other special exhibits in the hall were B. T. Hoyt's nursery exhibit in



Horticultural Hall, Minnesota State Fair, 1908.
View from north door looking along right side of main aisle.

the northwest corner, Northrup, King & Company with a very tasty seed exhibit and an entertaining sleight of hand performance to accentuate it, and in the center of the hall the magnificent lay out of the Jewell Nursery Company.

The judging was all done by home talent. Mr. Wyman Elliot as usual judged the plums, Prof. S. B. Green the professional fruits and seedlings; Mr. Chas. Haraldson, superintendent of the new fruit breeding farm, and Mr. Le Roy Cady, of the Experiment Station, other fruits in the hall.

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There were fewer visitors from points outside of the state than usual at the fair, at least as far as learned by the writer, Mr. L. A. Clemons, of Storm Lake, Ia., being the only acquaintance from abroad whose name was noted. Mr. Ditus Day spent the week with us again, camping on the state fair grounds as usual, his ninety-four years not seeming to interfere at all with his interest in horticulture at the fair, and were it not that his home place has passed into other hands we have no doubt he would still be exhibiting with us. He expressed a determination if his life was spared to meet with us again in 1909.

The list following will give a good idea of the division of awards. There should be quite a number of new exhibitors in this department to take the place of those who have passed away from us or removed to other localities. A review of the list of exhibitors ten years ago would show hardly a name of any one exhibiting at the present time. Members who are growing fruit are asked to look carefully into the situation and plan to be with us another year in this very interesting, useful and profitable work, not only for themselves but for the public as well.

Premiums Awarded on Fruits and Flowers at the Minnesota State Fair, 1908.

APPLES. (Open to all.)

Peck of Duchess, $25 divided pro rata:

Carl Steller, $1.65; Robt. A. Sodergren, $1.40; A. B. Lyman, $1.45; H. F. Bussee, $1.60; W. M. McDonald, $1.60; Nils Anderson, $1.75; Mrs. S. R. Spates, $1.70; Thos. Redpath, $1.05; W. J. Tingley, $1.50; G. A. Anderson, $1.65; Gust Johnson, $1.65; J. A. Howard, $1.30; Mrs. L. Bedley, $0.95; P. H. Perry, $1.30; Walter A. Yahnke, $1.50; O. F. Brand & Son, $1.30; F. I. Harris, $1.65.

Collection of twenty varieties, $40 to be divided pro rata:

A. B. Lyman, $5.65; W. J. Tingley, $5.00; Marion DeWitt, $4.40; Allen Mitchell, $4.70; J. A. Howard, $4.40; P. H. Perry, $4.40; W. A. Yahnke, $6.00; F. I. Harris, $5.45.

Collection of fifteen varieties, $35 to be divided pro rata:

A. B. Lyman, $3.35; Nils Anderson, $3.55; W. J. Tingley, $3.35; Marion DeWitt, $2.25; G. A. Anderson, $2.40; Allen Mitchell, $2.45; J. A. Howard, $2.80; P. H. Perry, $2.65; W. A. Yahnke, $3.55; F. I. Harris, $2.89; G. W. Strand, $2.80; J. W. Patten, $3.05.

Collection of ten varieties, $30 to be divided pro rata:

Carl G. Steller, $1.90; A. B. Lyman, $2.20; H. F. Busse, $1.65; Nils Anderson, $2.50; Mrs. S. R. Spates, $2.05; H. H. Pond, $1.80; W. J. Tingley, $2.40; G. A. Anderson, $1.90; J. A. Howard, $1.90; A. Wilwerding, $1.80; P. H. Perry, $1.65; W. A. Yahnke, $2.20; F. I. Harris, $2.40; G. W. Strand, $2.00; Frank Morris, $1.65;

APPLES. (For professionals.)

Collection, Professional, $75 to be divided pro rata (with an addition of $10 for first premium and $5 for second:

1. J. A. Howard, $30.55; 2. W. A. Yahnke, $24.50; F. I. Harris, $18.50; A. B. Lyman, $16.45.

SINGLE PLATES.

Premium.		
	Anis—	
1.	J. A. Howard, Hammond	$1.00
2.	Walter A. Yahnke, Winona	.75
3.	F. I. Harris, LaCrescent	.50
	Antonovka—	
1.	Thos. Redpath, Wayzata	1.00
2.	A. B. Lyman, Excelsior	.75
3.	Geo. W. Harris, Taylors Falls	.50
	Ben Davis—	
1.	Walter A. Yahnke	1.00
2.	H. H. Pond, Minneapolis	.75
3.	J. A. Howard	.50

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Brett—

1.	A. B. Lyman	1.00
2.	Thos. Redpath	.75
3.	B. P. Christensen, Hutchinson	.50

Borovinca—

1.	Gust Johnson, Excelsior	1.00
2.	J. A. Howard	.75
3.	Thomas Redpath	.50

Christmas—

1.	Geo. W. Strand, Taylors Falls	1.00
2.	A. B. Lyman	.75
3.	J. A. Howard	.50

Fameuse—

1.	F. I. Harris	1.00
2.	Walter Yahnke	.75
3.	J. A. Howard	.50

Gideon—

1.	Geo. A. Anderson, Renville	1.00
2.	A. B. Lyman	.75

Giant Swaar—

1.	F. I. Harris	1.00
2.	J. A. Howard	.75

Gilbert—

1.	A. B. Lyman	1.00
2.	J. A. Howard	.75

Golden Russet—

1.	Walter Yahnke	1.00
2.	J. A. Howard	.75
3.	F. I. Harris	.50

Grundy—

1.	J. A. Howard	1.00
2.	Walter Yahnke	.75
3.	H. H. Pond	.50

Haas—

1.	Walter Yahnke	1.00
2.	G. A. Anderson	.75
3.	F. I. Harris	.50

Hutchins—

1.	F. I. Harris	1.00
2.	J. A. Howard	.75
3.	Walter Yahnke	.50

Iowa Beauty—

1.	J. W. Beckman, Cokato	1.00
2.	J. A. Howard	.75
3.	Walter Yahnke	.50

Jewell's Sweet—

1.	Thos Redpath	1.00
2.	J. A. Howard	.75
3.	W. A. Yahnke	.50

Jewell's Winter—

1.	Thomas Redpath	1.00
2.	J. A. Howard	.75
3.	Walter A. Yahnke	.50

Judson—

1.	J. A. Howard	1.00

Lord's L—

1.	J. A. Howard	1.00
2.	Thomas Redpath	.75

Lowland Raspberry—

1.	A. B. Lyman	1.00
2.	Geo. W. Strand, Taylors Falls	.75

Malinda—

1.	F. I. Harris	1.00

Nelson—

1.	F. I. Harris	1.00

Peach—

1.	F. I. Harris	1.00
2.	O. F. Brand & Son, Faribault	.75
3.	J. A. Howard	.50

Plumbs Cider—

1.	A. B. Lyman	1.00
2.	J. A. Howard	.75
3.	Walter Yahnke	.50

Rollins' Prolific—..

1.	J. A. Howard	1.00
2.	Walter Yahnke	.75

Repka Malenda—

1.	Geo. W. Strand	1.00
2.	J. A. Howard	.75
3.	Gust Johnson, Excelsior	.50

St. Lawrence—

1.	Walter Yahnke	1.00
2.	J. A. Howard	.75
3.	Gust Johnson	.50

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Salome—

1.	Walter Yahnke	1.00
2.	J. A. Howard	.75
3.	Gust Johnson	.50

Scott's Winter—

1.	F. I. Harris	1.00
2.	J. A. Howard	.75
3.	Walter Yahnke	.50

Sugar Loaf—

1.	Walter Yahnke	1.00
2.	F. I. Harris	.75
3.	J. A. Howard	.50

Tetofsky—

1.	G. A. Anderson	1.00
2.	Walter Yahnke	.75
3.	O. F. Brand & Son	.50

Utter—

1.	A. B. Lyman	1.00
2.	Walter Yahnke	.75
3.	Gust Johnson	.50

University—

1.	Thomas Redpath	1.00
2.	A. B. Lyman	.75
3.	B. P. Christenson	.50

Walbridge—

1.	Walter Yahnke	1.00
2.	J. A. Howard	.75
3.	G. A. Anderson	.50

Yahnke—

1.	Walter Yahnke	1.00
2.	J. A. Howard	.75

Yellow Sweet—

1.	A. B. Lyman	1.00
2.	J. A. Howard	.75
3.	Walter Yahnke	.50

Yellow Transparent—

1.	A. B. Lyman	1.00
2.	J. A. Howard	.75
3.	Walter Yahnke	.50

Anisim—

1.	F. I. Harris	2.00
2.	J. A. Howard	1.75
3.	B. P. Christenson	1.50
4.	Gust Johnson	1.25
5.	Walter Yahnke	1.00
6.	A. B. Lyman	.75
7.	E. V. E. G. Enostred, Sacred Heart	.50

Charlamoff—

1.	A. B. Lyman	2.00
2.	J. A. Howard	1.75
3.	Gust Johnson	1.50
4.	F. I. Harris	1.25
5.	Thomas Redpath	1.00
4.	B. P. Christenson	.75
7.	H. H. Pond, Minneapolis	.50

Duchess—

1.	Walter Yahnke	2.00
2.	F. I. Morris	1.75
3.	A. B. Lyman	1.50
4.	J. A. Howard	1.25
5.	Mr. Steller, Excelsior	1.00
6.	Gust Johnson	.75
7.	H. H. Pond	.50

Hibernal—

1.	J. A. Howard	2.00
2.	Geo. W. Strand	1.75
3.	Walter Yahnke	1.50
4.	A. B. Lyman	1.25
5.	G. A. Anderson	1.00
6.	B. P. Christenson	.75
7.	F. I. Harris	.50

Longfield—

1.	J. A. Howard	2.00
2.	F. I. Harris	1.75
3.	Walter Yahnke	1.50
4.	A. B. Lyman	1.25
5.	Gust Johnson	1.00
6.	Thomas Redpath	.75
7.	B. P. Christenson	.50

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McMahon—

1.	Walter Yahnke	2.00
2.	J. A. Howard	1.75
3.	F. I. Harris	1.50
4.	Thos. Redpath	1.25
5.	O. F. Brand & Son	1.00
6.	Gust Johnson	.75

Northwestern Greening—

1.	Walter Yahnke	2.00
2.	A. B. Lyman	1.75
3.	J. W. Beckman	1.50
4.	F. I. Harris	1.25
5.	Mr. Steller	1.00
6.	G. A. Anderson	.75
7.	J. A. Howard	.50

Okabena—

1.	F. I. Harris	2.00
2.	Walter Yahnke	1.75
3.	H. H. Pond	1.50
4.	J. A. Howard	1.25
5.	Thos. Redpath	1.00
6.	B. P. Christenson	.75
7.	A. B. Lyman	.50

Patten's Greening—

1.	J. A. Howard	2.00
2.	Walter Yahnke	1.75
3.	A. B. Lyman	1.50
4.	B. P. Christenson	1.25
5.	F. I. Harris	1.00
6.	Mr. Steller	.75
7.	Geo. W. Strand	.50

Peter—

1.	A. B. Lyman	2.00
2.	Walter Yahnke	1.75
3.	Geo. W. Strand	1.50
4.	Gust Johnson	1.25
5.	J. A. Howard	1.00
6.	F. I. Harris	.75
7.	O. F. Brand & Son	.50

Peerless—

1.	A. B. Lyman	2.00
2.	Walter Yahnke	1.75
3.	Geo. W. Strand	1.50
4.	Gust Johnson	1.25
5.	J. A. Howard	1.00
6.	F. I. Harris	.75
7.	O. F. Brand & Son	.50

Wealthy—

1.	W. K. McDowall	2.00
2.	Walter Yahnke	1.75
3.	Thos. Redpath	1.50
4.	F. I. Harris	1.25
5.	H. F. Busse	1.00
6.	G. A. Anderson	.75
7.	Mr. Steller	.50

Wolf River—

1.	Walter Yahnke	2.00
2.	F. I. Harris	1.75
3.	J. A. Howard	1.50
4.	A. B. Lyman	1.25
5.	G. A. Anderson	1.00
6.	Gust Johnson	.75

SAML. B. GREEN, Judge.

APPLES. (For Amateurs.)

Collection not to exceed 40 or less than 20 varieties.
$75 to be divided pro rata (with an addition of $10 for the first premium and $5 for the second premium).

1.	Allen Mitchell	$19.98
2.	Marion DeWitt	18.69
3.	W. J. Tingley	18.48
4.	P. H. Perry	17.90

SINGLE PLATES.

Anis—

1.	Marion DeWitt, Hammond	$1.00
2.	Allen Mitchell, Hammond	.75

Antonovka—

1.	P. H. Perry, Excelsior	1.00
2.	J. J. Stocker, Pine Island	.75
3.	D. T. Wheaton, Morris	.50

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Ben Davis—
1. C. C. Gray, Rochester 1.00
2. Allen Mitchell ..... .75
3. Hamlin Poore, Bird Island ..... .50

Brett—
1. C. C. Gray 1.00
2. J. W. Patten, Long Lake ..... .75
3. Marion DeWitt ..... .50

Borovinca—
1. W. M. McDonald, Excelsior 1.00
2. Mrs. S. R. Spates, Wayzata ..... .75
3. P. H. Perry, Excelsior ..... .50

Christmas—
1. Allen Mitchell 1.00
2. Marion DeWitt ..... .75

Fameuse—
1. W. J. Tingley, Withrow 1.00
2. Allen Mitchell ..... .75
3. Marion DeWitt ..... .50

Giant Swaar—
1. Unknown 1.00
2. J. W. Patten ..... .75

Gideon—
1. A. Wilwerding, Freeport 1.00
2. Frank Morris, Lake Elmo ..... .75
3. P. H. Perry ..... .50

Gilbert—
1. F. F. Farrar, White Bear 1.00
2. C. C. Gray ..... .75
3. Allen Mitchell ..... .50

Golden Russet—
1. Marion DeWitt 1.00
2. Allen Mitchell ..... .75

Grundy—
1. Marion DeWitt 1.00
2. Allen Mitchell ..... .75

Haas—
1. W. J. Tingley 1.00
2. Allen Mitchell ..... .75
3. Marion DeWitt ..... .50

Hutchins—
1. W. J. Tingley 1.00
2. Allen Mitchell ..... .75
3. Marion DeWitt ..... .50

Iowa Beauty—
1. Mrs. S. R. Spates 1.00
2. J. J. Stocker ..... .75
3. Mrs Isabella Barton, Excelsior ..... .75

Jewell's Winter—
1. Nils Anderson, Lake City 1.00
2. Mr. S. R. Spates ..... .75
3. Marion DeWitt ..... .50

Jewell's Sweet—
2. Allen Mitchell ..... .75

Judson—
1. Allen Mitchell 1.00
2. Marion DeWitt ..... .75

Lord's L—
1. Marion DeWitt 1.00
2. Allen Mitchell ..... .75

Malinda—
1. Marion DeWitt 1.00
2. J. W. Patten ..... .75
3. H. H. S. Rowell, Excelsior ..... .50

Nelson—
1. W. J. Tingley 1.00
2. Marion DeWitt ..... .75

Newell's—
1. Allen Mitchell 1.00
2. Marion DeWitt ..... .75

Peach—
1. C. C. Gray 1.00
2. Allen Mitchell ..... .75
3. Marion DeWitt ..... .50

Plumbs Cider—
1. Allen Mitchell 1.00
2. Marion DeWitt ..... .75

Rollin's Prolific—
1. Allen Mitchell 1.00
2. Nils Anderson ..... .75
3. Marion DeWitt ..... .50

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Repka Malenka—

1.	Mrs. S. R. Spates	1.00
2.	J. W. Patten	.75
3.	P. H. Perry	.50

Salome—

1.	Frank Morris	1.00

Scott's Winter—

1.	Nils Anderson	1.00
2.	J. W. Patten	.75
3.	P. H. Perry	.50

St. Lawrence—

1.	Allen Mitchell	1.00
2.	Marion DeWitt	.75

Superb—

1.	W. J. Tingley	1.00
2.	Allen Mitchell	.75
3.	Marion DeWitt	.50

Tetofsky

1.	W. J. Tingley	1.00
2.	J. W. Patten	.75

Utter—

1.	Nils Anderson	1.00
2.	Marion DeWitt	.75
3.	Allen Mitchell	.50

University—

1.	W. J. Tingley	1.00
2.	A. Wilwerding	.75
3.	E. A. Farmer, Minneapolis	.50

White Pigeon—

1.	A. Wilwerding	1.00

Walbridge—

1.	Marion DeWitt	1.00
2.	Nils Anderson	.75
3.	J. J. Stocker	.50

Yahnke—

1.	Allen Mitchell	1.00
2.	Marion DeWitt	.75

Yellow Sweet—

1.	Allen Mitchell	1.00
2.	Marion DeWitt	.75

Yellow Transparent—

1.	A. Wilwerding	1.00
2.	P. H. Perry	.75
3.	E. A. Farmer	.50

Anisim—

1.	Henry Husser, Minneiska	2.00
2.	J. J. Stocker	1.75
3.	A. W. Page, Long Lake	1.50
4.	Unknown	1.25
5.	C. C. Gray	1.00
6.	P. H. Perry	.75
7.	F. E. Cutting, Byron	.50

Duchess—

1.	W. J. Tingley	2.00
2.	H. Springer, Minneapolis	1.50
3.	A. W. Page	1.75
4.	Alfred Veblor, Stillwater	1.25
5.	Robert A. Sodergren	1.00
6.	P. H. Perry	.75
7.	Mrs. S. R. Spates	.50

Charlamoff—

1.	Mrs. S. R. Spates	2.00
2.	W. J. Tingley	1.75
3.	Frank Morris	1.50
4.	J. W. Patten	1.25
5.	Allen Mitchell	1.00
6.	A. W. Page	.75
7.	A. Wilwerding	.75

Hibernal—

1.	F. F. Farrar	2.00
2.	Marion DeWitt	1.75
3.	W. J. Tingley	1.50
4.	John Henderson, Cokato	1.25
5.	Unknown	1.00
6.	J. W. Patten	.75
7.	J. J. Stocker	.50

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Longfield—

1.	W. J. Tingley	2.00
2.	Henry Husser	1.75
3.	P. H. Perry	1.50
4.	Allen Mitchell	1.25
5.	C. C. Gray	1.00
6.	Nils Anderson	.75
7.	Marion DeWitt	.50

McMahon—

1.	Allen Mitchell	2.00
2.	Marion DeWitt	1.75
3.	Mr. S. R. Spates	1.50
4.	P. H. Perry	1.25

Northwestern Greening—

1.	Mrs. S. R. Spates	2.00
2.	Nils Anderson	1.75
3.	H. H. S. Rowell	1.50
4.	J. W. Patten	1.25
5.	J. O. Weld, Mound	1.00
6.	J. J. Stocker	.75
7.	Allen Mitchell	.50

Okabena—

1.	Nils Anderson	2.00
2.	W. J. Tingley	1.75
3.	P. H. Perry	1.50
4.	Mrs. S. R. Spates	1.25
5.	Robert A. Sodergren	1.00
6.	Mrs. D. W. C. Ruff, St. Paul	.75
7.	C. C. Gray	.50

Patten's Greening—

1.	W. J. Tingley	2.00
2.	Allen Mitchell	1.75
3.	Nils Anderson	1.50
4.	P. H. Perry	1.25
5.	A. Wilwerding	1.00
6.	Mrs. D. W. C. Ruff	.75
7.	John Henderson	.50

Peerless—

1.	Nils Anderson	2.00
2.	W. J. Patten	1.75
3.	Mrs. S. R. Spates	1.50
4.	Frank Morris	1.25
5.	Allen Mitchell	1.00

Peter—

1.	Mrs. S. R. Spates	2.00
2.	C. C. Gray	1.75
3.	P. H. Perry	1.50
4.	J. W. Patten	1.25
5.	A. W. Page	1.00
6.	Marion DeWitt	.75

Wealthy—

1.	H. Springer	2.00
2.	A. W. Page	1.75
3.	J. O. Weld	1.50
4.	Mrs. D. W. C. Ruff	1.25
5.	Luther B. Hanson, White Bear	1.00
6.	Unknown	.75
7.	Alfred Vebler	

Wolf River—

1.	Alfred Vebler	2.00
2.	Marion DeWitt	1.75
3.	P. H. Perry	1.50
4.	A. Wilwerding	1.25
5.	Allen Mitchell	1.00

CHAS. HARALSON, LE ROY CADY, Judges.

SEEDLING APPLES. (Open to all.)

Collection—

$100 to be divided pro rata:

A. B. Lyman, $24.00; Nils Anderson, $9.00; H. H. Pond, $9.00; J. A. Howard, $14.00; Walter A. Yahnke, $7.00; T. E. Perkins, $37.00.

Summer variety—

1.	A. B. Lyman, Excelsior	$6.00
2.	O. F. Brand & Son, Faribault	4.00
3.	H. H. Pond, Minneapolis	2.00
4.	Thos. Redpath, Wayzata	1.00

Fall variety, not sweet, never having received a premium at the Minnesota State Fair—

1.	Nils Anderson	6.00
2.	A. B. Lyman	4.00
3.	H. H. Pond	2.00
4.	Thomas Redpath	1.00

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Fall variety, not sweet (open to all)—

1.	Nils Anderson	6.00
2.	A. B. Lyman	4.00
3.	A. B. Lyman	2.00
4.	A. B. Lyman	1.00

Winter variety, not sweet, never having received a premium at the Minnesota State Fair—

1.	Thomas Redpath	6.00
2.	A. B. Lyman	4.00
3.	A. B. Lyman	2.00
4.	J. A. Howard	1.00

Winter variety, not sweet (open to all)—

1.	Thomas Redpath	6.00
2.	A. B. Lyman	4.00
3.	A. B. Lyman	2.00
4.	G. A. Anderson, Renville	1.00

Sweet variety, never having received a premium at Minnesota State Fair—

1.	Thos. Redpath	6.00
2.	A. B. Lyman	4.00
3.	A. B. Lyman	2.00

PROF. S. B. GREEN, WYMAN ELLIOT, Judges.

CRABS AND HYBRIDS.

SINGLE PLATES.

Dartt—

1.	B. P. Christenson	1.00
2.	John Henderson, Cokato	.75
3.	J. V. Stocker	.50

Early Strawberry—

1.	Alfred Veblen	1.00
2.	W. J. Tingley	.75
3.	A. B. Lyman	.50

Faribault—

1.	Frank Morris	1.00
2.	H. H. Pond	75
3.	P. H. Perry	.50

Florence—

1.	Walter Yahnke	1.00
2.	J. A. Howard	.75

Gideon's No. 6—

1.	J. A. Howard	1.00
2.	Geo. W. Strand	.75
3.	Marion DeWitt	.50

General Grant—

1.	J. A. Howard	1.00
2.	Marion DeWitt	.75
3.	Allen Mitchell	.50

Hyslop—

1.	Chas. W. Manley, Clear Lake	1.00
2.	W. J. Tingley	.75
3.	Geo. W. Strand	.50

Lyman's Prolific—

1.	A. B. Lyman	1.00
2.	Robert A. Sodergren	.75
3.	Mr. Steller	.50

Martha—

1.	Walter Yahnke	1.00
2.	J. A. Howard	.75
3.	J. V. Stocker	.50

Minnesota—

1.	F. E. Cutting	1.00
2.	Alfred Veblen	.75
3.	Mr. Steller	.50

Montreal Beauty—

1.	J. A. Howard	1.00
2.	Allen Mitchell	.75
3.	Marion DeWitt	.50

Meader's Winter—

1.	J. A. Howard	1.00
2.	Marion DeWitt	.75
3.	Allen Mitchell	.50

Orange—

1.	J. A. Howard	1.00
2.	O. F. Brand & Son	.75
3.	Allen Mitchell	.50

Picketts—

1.	J. A. Howard	1.00
2.	Allen Mitchell	.75
3.	Marion DeWitt	.50

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Pride of Minneapolis—
1. Mrs. S. R. Spates 1.00
2. Thos. Redpath ..... .75
3. H. F. Busse ..... .50

Shields—
1. Marion DeWitt 1.00

Sweet Russet—
1. Walter Yahnke 1.00
2. Mrs. Spates ..... .75
3. J. A. Howard ..... .50

Tonka—
1. F. I. Harris 1.00
2. Geo. Strand ..... .75
3. Mrs. S. R. Spates ..... .50

Transcendent—
1. W. M. McDonald 1.00
2. Mr. Steller ..... .75
3. Alfred Vebler ..... .50

Virginia—
1. G. A. Anderson 1.00
2. S. R. Spates ..... .75
3. W. J Tingley ..... .50

Whitney—
1. W. M. McDonald 1.00
2. Walter Yahnke ..... .75
3. F. F. Farrar ..... .50

CHAS. HARALSON, LE ROY CADY, Judges.

PLUMS.

(Open to all.)

Best ten varieties ($20 to be divided pro fata):

Marion DeWitt, $2.50; Gust Johnson, $3.10; Allen Mitchell, $2.72; H. V. Poore, $2.34; J. A. Howard, $2.92; W. A. Yahnke, $3.50; G. W. Strand, $2.92.

Collection ($30 to be divided pro rata):

Nils Anderson, $4.08; Marion DeWitt, $3.12; Gust Johnson, $3.84; Allen Mitchell, $3.60; J. A. Howard, $3.84; A. Wilwerding, $3.36; W. A. Yahnke, $4.32; G. W. Strand, $3.84.

Seedling plums ($15 to be divided pro rata):

H. F. Busse, $0.90; Thos. Redpath, $1.12; Allen Mitchell, $1.79; H. V. Poore, $1.24; J. A. Howard, $1.57; Mrs. L. Bedley, $1.34; W. A. Yahnke, $1.68; $1.45; $2.01.

SINGLE PLATES.

Aitkin—
1. A. Wilwerding 1.00
2. Thomas Redpath ..... .75
3. J. A. Howard ..... .50

Bender (Paul Wolf)—
1. A. B. Lyman 1.00
2. J. A. Howard ..... .75
3. Allen Mitchell ..... .50

Cheney—
1. Mrs. F. H. Gibbs 1.00
2. Gust Johnson ..... .75
3. W. A. Yahnke ..... .50

DeSoto—
1. Walter Yahnke 1.00
2. Nils Anderson ..... .75
3. Gust Johnson ..... .50

Forest Garden—
1. Walter Yahnke 1.00
2. Nils Anderson ..... .75
3. Geo. W. Strand ..... .50

Hawkeye—
1. Walter Yahnke 1.00
2. J. A. Howard ..... .75
3. G. W. Strand ..... .50

New Ulm—
1. Gust Johnson 1.00
2. J. A. Howard ..... .75
3. Allen Mitchell ..... .50

Ocheeda—
1. Walter Yahnke 1.00
2. J. A. Howard ..... .75
3. Allen Mitchell ..... .50

Rockford—
1. J. A. Howard 1.00
2. Gust Johnson ..... .75
3. Geo. W. Strand ..... .50

Rollingstone—
1. Walter Yahnke 1.00
2. J. A. Howard ..... .75
3. H. V. Poore ..... .50

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Stoddard—

1.	Walter Yahnke	1.00
2.	J. A. Howard	.75
3.	Gust Johnson	.50

Surprise—

1.	Walter Yahnke	1.00
2.	Mrs. S. R. Spates	.75
3.	Geo. W. Strand	.50

Weaver—

1.	Gust Johnson	1.00
2.	Walter Yahnke	.75
3.	H. F. Busse	.50

Wolf (Freestone)—

1.	Gust Johnson	1.00
2.	J. A. Howard	.75
3.	Nils Anderson	.50

Wolf (Clingstone)—

1.	Walter Yahnke	1.00
2.	J. A. Howard	.75
3.	Gust Johnson	.50

Wood—

1.	A. Wilwerding	1.00
2.	Allen Mitchell	.75
3.	Walter Yahnke	.50

Wyant—

1.	Walter Yahnke	1.00
2.	H. V. Poore	.75
3.	Geo. W. Strand	.50

Pears—

1.	F. I. Harris	2.00
2.	O. B. McClintock, 2100 Irving Ave., Minneapolis	1.00

Compass Cherry Plum—

1.	Mrs. S. R. Spates	2.00
2.	Mrs. D. W. C. Ruff	1.00
3.	Geo. W. Strand	.50

Japan Hybrid—

1.	M. B. Hartman, St. Paul	1.00

Best plate of seedling plums to average not less than 1¼ inches—

1.	Walter Yahnke	5.00
2.	Walter Yahnke	4.00
3.	J. A. Howard	3.00
4.	Walter Yahnke	2.00
5.	Walter Yahnke	1.00

WYMAN ELLIOT, Judge.

GRAPES.

Collection ($60.00 to be divided pro rata):
Robt. A. Sodergren, $1.50; Gust Johnson, $30.00; P. H. Perry, $9.00; F. I. Harris, $3.00; G. W. Strand, $4.50; Mrs. Isabella Barton, $12.00.

SINGLE PLATES.

Agawam—

1.	Gust Johnson	1.50
2.	Mr. Steller	1.00
3.	Geo. W. Strand	.50

Aminia—

1.	Gust Johnson	1.50
2.	Mrs. Isabella Barton	1.00

Beta—

1.	E. G. Enostvedt	1.50
2.	Geo. W. Strand	1.00
3.	A. Wilwerding	.50

Brighton—

1.	Gust Johnson	1.50
2.	Geo. W. Strand	1.00
3.	A. Wilwerding	.50

Concord—

1.	Mrs. D. W. C. Ruff	1.50
2.	Gust Johnson	1.00
3.	Mrs. Isabella Barton	.50

Cottage—

1.	Gust Johnson	1.50

Campbell's Early—

1.	F. I. Harris	1.50
2.	Gust Johnson	1.00
3.	Geo. W. Strand	.50

Delaware—

1.	Gust Johnson	1.50
2.	Mrs. D. W. C. Ruff	1.00
3.	Geo. W. Strand	.50

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Duchess—
1. Gust Johnson 1.50
2. Mr. Steller 1.00

Early Victor—
1. Gust Johnson 1.50

Eldorado—
1. Mrs. Isabella Barton 1.50

Empire State—
1. Gust Johnson 1.50
2. Mrs. Isabella Barton 1.00

Green Mountain—
1. Mrs. Isabella Barton 1.50
2. Gust Johnson 1.00

Herbert (Roger's No. 44)—
1. Gust Johnson 1.50

Iona—
1. Gust Johnson 1.50

Janesville—
1. P. H. Perry, Excelsior 1.50
2. Robert A. Sodergren, Scandia 1.00

Lindley (Roger's No. 9)—
1. Gust Johnson 1.50

Lady—
1. Gust Johnson 1.50

Martha—
1. Gust Johnson 1.50

Massasoit (Roger's No. 3)—
1. Gust Johnson 1.50

Moore's Diamond—
1. Gust Johnson 1.50
2. Geo. W. Strand 1.00

Moore's Early—
1. Gust Johnson 1.50
2. Mr. Steller 1.00

Niagara—
1. Geo. W. Strand 1.50
2. Gust Johnson 1.00
3. Mrs. Isabella Barton ..... .50

Pocklington—
1. Gust Johnson 1.50
2. Mrs. Isabella Barton 1.00

Pokeepsie Red—
1. Gust Johnson 1.50
2. Mrs. Isabella Barton 1.00

Telegraph—
1. Gust Johnson 1.50

Wilder (Roger's No. 4)—
1. Gust Johnson 1.50

Woodruff Red—
1. Gust Johnson 1.50
2. Mrs. Isabella Barton 1.00

Worden—
1. Gust Johnson 1.50
2. Geo. W. Strand 1.00
3. Mrs. Isabella Barton ..... .50

Wyoming Red—
1. Gust Johnson 1.50
2. Geo. W. Strand 1.00

Seedling Grapes—
1. Frank Stifter, Cokato 4.00
2. A. Wilwerding 3.00

LE ROY CADY, Judge.

FLOWERS.

(For professionals.)

Best collection of decorative plants—
1. Aug. S. Swanson, St. Paul $35.00
2. Minneapolis Floral Co., Minneapolis 30.00
3. E. Nagel & Son, Minneapolis 20.00
4. Jno. Vasatka, Minneapolis 15.00

Best display of plants in bloom—
1. Minneapolis Floral Co., Minneapolis 20.00
2. E. Nagel & Son, Minneapolis 15.00
3. Jno. Vasatka, Minneapolis 10.00

Best five hanging baskets—
1. Aug. S. Swanson, St. Paul 6.00
2. Minneapolis Floral Co., Minneapolis 4.00
3. E. Nagel & Son, Minneapolis 3.00
4. Jno. Vasatka, Minneapolis 2.00

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Pot or tub of made up palms—

1.	Minneapolis Floral Co., Minneapolis	5.00
2.	E. Nagel & Son, Minneapolis	4.00
3.	Aug. S. Swanson, St. Paul	3.00

Specimen of palm, any variety—

1.	Aug. S. Swanson, St. Paul	5.00
2.	E. Nagel & Son, Minneapolis	4.00
3.	Minneapolis Floral Co., Minneapolis	3.00

Specimen of fern, any variety—

1.	Minneapolis Floral Co., Minneapolis	5.00
2.	Aug. S. Swanson, St. Paul	4.00
3.	E. Nagel & Son, Minneapolis	3.00
4.	Jno. Vasatka, Minneapolis	2.00

Vase planted for display—

1.	Aug. S. Swanson, St. Paul	5.00
2.	Minneapolis Floral Co., Minneapolis	4.00
3.	E. Nagel & Son, Minneapolis	3.00
4.	Jno. Vasatka, Minneapolis	2.00

Best display of cut flowers—

1.	Aug. S. Swanson, St. Paul	25.00
2.	Jas. Souden & Co., Minneapolis	20.00
3.	Minneapolis Floral Co., Minneapolis	15.00
4.	Hoyt Nursery Co., Hamline	10.00

Basket of cut flowers, not to exceed 20 inches in length—

1.	Minneapolis Floral Co., Minneapolis	10.00
2.	Aug. S. Swanson, St. Paul	8.00
3.	James Souden & Co., Minneapolis	6.00
4.	R. A. Latham, Minneapolis	4.00

Hand Bouquet—

1.	R. A. Latham, Minneapolis	4.00
2.	Minneapolis Floral Co., Minneapolis	3.00
3.	James Souden & Co., Minneapolis	2.00

Bride bouquet—

1.	James Souden & Co., Minneapolis	5.00
2.	Minneapolis Floral Co., Minneapolis	4.00
3.	R. A. Latham, Minneapolis	3.00
4.	Jno. Vasatka, Minneapolis	2.00

Table decoration, not to exceed 40 square feet—

1.	Aug. S. Swanson, St. Paul	35.00
2.	Minneapolis Floral Co., Minneapolis	30.00
3.	James Souden & Co., Minneapolis	25.00
4.	R. A. Latham, Minneapolis	20.00

Floral wreath, twenty-four inches diameter—

1.	Aug. S. Swanson, St. Paul	20.00
2.	Jas. Souden & Co., Minneapolis	15.00
3.	Minneapolis Floral Co., Minneapolis	12.00
4.	A. W. Latham, Minneapolis	10.00

GUST MALMQUIST, Judge.

CUT FLOWERS.

(For Amateurs.)

Not less than six varieties in each collection.

Asters—

1.	W. O. Winston, Tonka Bay	4.00
2.	Frank Morris, Lake Elmo	2.50
3.	Mrs. A. W. Brown, St. Louis Park	1.50
4.	L. B. & H. G. Losey, 5100 Cedar Ave., Minneapolis	1.00

Dahlias—

1.	Mrs. D. W. C. Ruff, St. Paul	4.00
2.	Mrs. S. R. Spates, Wayzata	2.50
3.	F. F. Farrar, White Bear	1.50
4.	Frank Morris	1.00

Dianthus Pinks—

1.	Mrs. F. H. Gibbs, St. Anthony Park	4.00
2.	Daniel Gantzer, St. Anthony Park	2.50
3.	John Gantzer, Lake Elmo	1.50
4.	W. O. Winston, Tonka Bay	1.00

Gladioli—

1.	Mrs. D. W. C. Ruff	4.00
2.	Frank Morris	2.50
3.	W. O. Winston	1.50
4.	Charles Krause, St. Paul	1.00

Nasturtiums—

1.	Mrs. A. W. Brown, St. Louis Park	4.00
2.	J. N. Scharff, St. Paul	2.50
3.	Mrs. D. W. C. Ruff	1.50
4.	Jchn Gantzer	1.00

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Marguerite Carnations—

1.	W. O. Winston	4.00
2.	Mrs. F. H. Gibbs	2.50
3.	Daniel Gantzer	1.50
4.	Chas. Krause	1.00

Pansies—

1.	S. M. C. Browne, St. Paul	4.00
2.	Chas. Krause	2.50
3.	J. N. Scharff	1.50
4.	L. B. & H. G. Losey	1.00

Zinnias—

1.	F. F. Farrar	4.00
2.	Chas. Krause	2.50
3.	Ed McNutte, Minneapolis	1.50
4.	Mrs. F. H. Gibbs	1.00

Perennial Phlox—

1.	Corinne B. Hoyt, Hamline	4.00
2.	W. O. Winston	2.50
3.	Frank Morris	1.50
4.	Mrs. D. W. C. Ruff	1.00

Sweet Peas—

1.	F. F. Farrar	4.00
2.	Frank Morris	2.50
3.	Mrs. A. W. Brown, St. Louis Park	1.50
4.	J. N Scharff	1.00

Snapdragon—

1.	Frank Morris	4.00
2.	W. O. Winston	2.50
3.	Mrs. F. H. Gibbs	1.50
4.	Chas. Krause	1.00

Collection of perennials, not less than ten varieties—

1.	W. O. Winston	10.00
2.	Mrs. D. W. C. Ruff	8.00
3.	E. A. Farmer, Minneapolis	6.00
4.	Chas. Krause	4.00

Collection of annuals—

1.	John Gantzer, Lake Elmo	10.00
2.	Chas. Krause	8.00
3.	Daniel Gantzer	6.00
4.	Mrs. F. H. Gibbs	4.00

BOUQUETS OF CUT FLOWERS.

(Open to members of some floral society.

Asters—

1.	Anna E. Rittle, St. Paul	$3.00
2.	Mrs. D. W. C. Ruff	2.50
3.	Mrs. F. H. Gibbs	1.50

Dahlias—

1.	Mrs. D. W. C. Ruff	3.00
2.	F. F. Farrar	2.50
3.	Mrs. F. H. Gibbs	1.50
4.	Unknown	1.00

Gladiolus—

1.	Mrs. D. W. C. Ruff	3.00
4.	Unknown	1.00

Sweet Peas—

1.	F. F. Farrar	3.00
2.	Mrs. E. W. Wilcox, White Bear	2.50
3.	Mrs. F. H. Gibbs	1.50
4.	Unknown	1.00

Snapdragon—

1.	Mrs. F. H. Gibbs	3.00
2.	Unknown	2.50

Perennials—

1.	B. T. Hoyt	3.00
2.	Mrs. D. W. C. Ruff	2.50
3.	Mrs. F. H. Gibbs	1.50
4.	Chas. Krause	1.00

Annuals—

1.	Mrs. D. W. C. Ruff	3.00
2.	Chas. Krause	2.50
3.	Mrs. F. H. Gibbs	1.50

Unknown—

4.	Mrs. F. H. Gibbs	1.00

Roses—

1.	B. T. Hoyt	3.00
2.	Mrs. D. W. C. Ruff	2.50
3.	Mrs. E. W. Wilcox	1.50
4.	Mrs. F. H. Gibbs	1.00

Lilies—

1.	Mrs. D. W. C. Ruff	3.00
2.	B. T. Hoyt	2.50

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Celosia—
1. Mrs. F. H. Gibbs..... 3.00
2. F. F. Farrar..... 2.50
Marguerite Carnations—
1. Mrs. F. H. Gibbs..... 3.00
2. Chas. Krause 2.50

OUT DOOR ROSES.
(Open to all.)
Collection of ten varieties of roses, six roses of each variety—
1. B. T. Hoyt..... 6.00

E. NAGEL, Judge.

Planting and Care of Shade Trees.

L. R. H. HIGHBY, ALBERT LEA.

(So. Minn. Hort. Society.)

In writing on this subject I have in mind shade trees as planted on the lawn and street and around our homes—not as planted for windbreak or in forest plantations—and my excuse for writing on what may be called a very simple subject, which apparently presents no difficulties, is that I have learned from observation that only a very small percentage of trees thus planted live and grow up to make perfectly healthy and well developed specimens for lack of correct planting, protection and care.

Now if it be worth while to plant a tree, it is worth while to do it right; and proceeding on that theory it is worth while to plant a good tree. What constitutes a good tree? A good tree is one which is grown from a good seed. If a farmer plants a poor potato he gets a poor result, but he can rectify his mistake the following season by getting good seed. Not so with the tree, which is to live for several generations. It is of the very highest importance in gathering tree seed that it be taken from groups of the very best specimens that can be found. If there is no hardiness, vigor and quality in the seed, don't expect to grow a tree with those qualities; and if you take seed from a shaggy, dwarfed and undesirable specimen, be prepared to find that "like produces like." Our good nurserymen understand this and are careful in selecting seed. If they do not, they should be forbidden to practice horticulture.

A tree should also be grown in the open while being nursed for transplanting, and that is one of the reasons why a numsery grown tree is so much better than one picked out of a grove.

It is not my purpose to treat the question of variety in this paper except by saying that there is very much more satisfaction in growing a good substantial tree than in growing the less desirable, quick growing varieties, such as poplars, cottonwood

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and box elder. Let it be your policy to have at least a part of your trees of the very best, such as hard maple, hackberry, white ash, elm and Norway maple.

The intelligent planter should, however, be careful not to plant a tree in soil where it does not naturally belong or at least have a fair chance. For example, don't plant the varieties that have a strong taproot and want upland soil in locations where water is near by the year round. You will only get a cripple of a tree with a diseased foliage. A tree, when planted, should be in the best of condition: that is to say, it should be absolutely dormant. Of course a tree can be successfully transplanted even

Residence of H. G. Day, Ballard's Point, Albert Lea, in winter time. Notice fine specimen of wild crab in foreground.

though it is not dormant, but I am treating of "the best of conditions." This condition is present when the tree is dug in the fall or else as early in the spring as possible before the bark has begun to loosen. If the tree is dug at this time and properly stored until well along in the spring, after seeding time, before planting, the best results may be looked for. To understand this, remember that your tree has life and energy stored up within itself from the previous season sufficient to start the new growth whenever certain conditions are present. Now, if you plant before those conditions are present, the tree will be subject to much hardship caused by a wet and cold spring, and when finally warm weather sets in a good deal of vitality is lost, and

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the result is that the tree dies or makes a poor growth. I am satisfied that most of the nursery stock sent out and reported dead fails to grow for this reason, together with the failure of the planter to pack the soil firmly about the roots in the planting process.

Let the man who plants understand that the little tender rootlets first put out by the transplanted tree cannot fasten themselves unless the dirt is packed very firmly and unless the air is excluded. Let him further understand that the roots need only a moderate amount of moisture, such as is naturally found in the soil in the early part of the year, and that an excessive amount of moisture for any length of time must surely kill the

Row of white elms along Fountain Lake Drive, Albert Lea. Trees are planted too close for good development.

tree, since it cannot make any use of it before it has foliage and since the roots nevertheless will absorb it. It is water-soaked roots that causes 90 per cent of failures in transplanting trees, and it is early planting that often is the indirect cause thereof.

As a rule it is not practicable to plant a small tree on the street or home grounds; it is too hard to protect it. A tree of one and one-fourth to two inches caliber is about the right size. If the soil is thin, a little money expended in hauling black dirt will be a good investment, as the tree will get a better start.

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As soon as planted the tree should be given proper protection. A two by two or some small post should be driven down and the tree tied to it, for the sake of the school boys who grab the tree with one hand swinging about it their corporosity three or four times. It should be protected from horses and other animals by wire screen, burlap, building paper or other material, and this protection must be given for a number of years. It is failure to do this that causes so many of our shade trees on streets and in public places to be cripples. The iceman or milkman will forget his team some day, and in less than one minute the product of years of care has been destroyed. In the growing season a horse can skin a young tree in a very short time.

The pruning of the shade tree is of much importance. In the first place, care should be taken that the tree be not allowed to make bad forks. The quicker it grows, the sharper will the forks be, and the sharper they are the easier they split. It is common to see large, splendid trees split in two during a storm and be absolutely ruined. The fault lies in the fact that some thirty or forty years earlier, while there were two branches equally strong and only one-half inch in diameter, one of them was not removed. The safest form is to allow the tree only one leader, then there is no chance to split. To get a good, compact crown on a tree, keep cutting the leading branches back a little, but do it while they are of small dimension, so that all wounds will be healed over and the tree may have the protection of a perfect bark. Do not allow trees to crowd one another; a few fully developed trees are much to be preferred to a row or group of them crowding one another out of shape.

"Is a sprout coming from the root of an orchard tree properly considered a seedling? If not, why not?"

Mr. Kellogg: It cannot be anything else but seedling, unless the tree is on its own roots. If that sprout comes from below the graft it is a seedling from the original tree upon which that tree was grafted; it is an original seedling. We sometimes get more than one seedling of the same kind; it is a division of roots. We never get two alike unless from the same seed.

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An Interesting Experiment in Orchard Culture.

PROF. SAMUEL B. GREEN, ST. ANTHONY PARK.

The Ohio Experiment Station has recently published a very interesting bulletin on the subject of different methods of orchard culture. The object of the experiments which are given is to show the comparative value of different methods of cultivation. It includes cultivation in the following ways:

No. 1. With cover crop.
No. 2. Clean culture.
No. 3. Sod culture.
No. 4. Sod mulch.

The experiment has been running six years.

The cover crop method is said to be safe, practical and excellent while the orchard is young and where the ground is level or nearly so, or on steep hillsides where the soil does not wash readily by flooding rains. For this method of culture, mammoth, crimson and medium red clover, also winter vetch and cow peas, do well. Soy beans do well even in northern Ohio and are generally conceded to be superior to cow peas for a cover crop. A combination of oats and Canada field peas also makes a good winter covering for the soil. It is customary to sow the cow peas and soy beans in drills two feet apart at the rate of three-fourths to one bushel per acre; the young plants are then cultivated once or twice to give them a vigorous start. A mixture of rye and vetch is sometimes sown broadcast among the cow peas and soy beans just after the last cultivation in autumn. This combination affords a dense carpeting during the winter and makes an early heavy growth the following spring by the time the ground should be plowed again. The trees in this plot made a satisfactory growth.

The clean culture plot had a hard time of it, as the soil washed badly, and it was necessary to seed it down after four seasons' trial, as many tons of soil had been swept away by the rains, and the roots of the trees were exposed in many places.

Under the sod culture method the trees were planted out in generous holes directly in the sod, and the area of ground for three or four feet in diameter about each tree was spaded, and these spaces have annually been kept clean and mellow. The grass in this orchard was cut and allowed to lie where it fell. No fertility was added to the space about the trees, which space was enlarged as the trees grew to correspond to a diameter equal to the head of the trees. In this plot the trees made only a fairly good growth. It is a most expensive and laborious way of growing orchard trees but may be used

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to good advantage upon very rough or stony areas where mulching material is not available.

Under the sod mulch method the trees were planted in the sod, much as in the sod culture method. The stems of the trees were enclosed with fine-meshed wire-screen cylinders, to prevent injury by mice or other rodents. The grass was also mowed three or four times each year, but instead of allowing it to lie where it fell, as under the sod culture method, it was raked up and used to maintain the mulch about the trees. The results in this orchard were very satisfactory—in fact, it gave the best results of all methods of cultivation tried, and the trees made an extremely satisfactory growth. It was thought that there might be more danger of injury from borers and other insects owing to the mulch about the trees affording them good protection, but this did not seem to be the case, and no more injury was noticed in this plot from insects than in those that were not mulched.

It has been frequently claimed that under the sod culture method the tendency was for apple trees to produce their roots near the surface of the ground, but it was found in these experiments that the root systems of the apple trees grown under the different methods of culture were at a surprisingly uniform depth, the greater portion of the roots, both large and small, having remained in the upper six inches of soil. The fibrous, or feeding, root system of a tree under annual plowing and clean culture with cover-crops practically renews itself annually, pushing up thousands of fibrous rootlets to the very surface of the soil. Apparently few of these rootlets go into the lower, more compact, colder soil. The partial or even total destructions of these surface-feeding roots, which occurs during the hotter and drier months of summer and during the cold months of winter, does not cause the tree to suffer in the least, and there was found to be an immense net work of rootlets occupying not only the upper two inches of soil, but also the four inches below. The conclusions from this fact are, that there can be little danger in changing from a heavy mulching to a clean culture or cover crop plan.

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Treatment of Ground in Adult Orchard.

HAMLIN V. POORE, BIRD ISLAND.

In giving my views on this subject, I shall be guided as much by observation as by actual experience. My great love of fruit, and especially of the apple, has added keener interest to my observations and has been a guide and help to me in studying apple culture.

Having a large orchard as a playground in my childhood days made it easy for me to observe the effects of different modes of treatment of ground in orchards. I have seen orchards where the ground was undisturbed for years, where a heavy sod of grass had formed,

Hamlin V. Poore, wife and daughter and his topworked tree of thirty varieties.

both of timothy and blue grass, and where sheep and cattle had the run of the orchard as pasture. In no case could I see any harm to the trees or failure of fruit. This was in southern Ohio, where all the orchards were either grafted upon full seedling roots, or were seedling trees that had not been grafted.

Since coming to this state, over thirty years ago, I have had opportunity to observe quite a number of orchards, but few of them were very old. The difference between cultivated and uncultivated orchards

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depends principally upon whether the trees were from piece root graft or full seedling graft. If the former, much cultivation is needed and even then the orchard is short lived, and with us on the prairie it is a question if it pays. With an orchard on natural seedling roots it is different, for the roots are deep and are not so easily affected by the deep drying or deep freezing of the surface soil. With an orchard of such trees I want a growth of white Dutch or Alsike clover or blue grass, and with it chickens and pigs occupying their time scratching and rooting for a living. And when the trees are four inches or more in diameter, then I want a few grown hogs in the orchard, especially in the fall, and to have them fed under the trees that they may root over the sod so the winter freezing will destroy the eggs of insects injurious to the fruit.

The conclusion I have arrived at is that if you want a successful, healthy orchard and one that needs little, if any, cultivation, plant only those trees having natural root conditions. I consider that trees growing from seed without transplanting are the best to depend upon in this climate; next best are trees transplanted very young—not older than one year and from seed, and the next and last on my list to recommend are trees grafted upon full seedling stock. I do not believe any method known for cultivating or treating the ground will insure a long-lived, successful orchard, where the trees are grafted upon piece roots.

Treatment of Ground in Adult Orchard.

B. E. ST. JOHN, FAIRMONT.

In giving my views on this subject I think it is better to start in at the planting of the orchard. Some thirty-five years ago, when we first arrived in Minnesota, we asked why they did not try to raise apples, and the reply was that it was too cold and the trees would not live. Now from boyhood up when we were told that we could not do a thing that was just what we tried to do, so the first opportunity we had we bought some apple trees, and we soon found out that the persons that said that apples could not be raised in Minnesota had never tried to do it.

The trees should be planted twenty to thirty feet apart each way, according to the variety of tree and what other use you are going to put the orchard to later on. Plant the trees as nearly perpendicular as you can, put in some hoed crop and keep well cultivated and manured. Do this for at least six or eight years, mulching each year well around the trees and cultivating the mulching in the following spring. At the

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end of this period seed down to red clover alone, mulch and manure each year as before stated. The clover can be cut and used for feed, or the orchard can be used for chicken range or, if the trees are properly protected, for hog or calf pasture. Do not seed to grass of any kind—it has been thoroughly demonstrated that trees and grass do not do well together. The trees should be properly pruned when young, and this will obviate the necessity of having to remove large limbs when the trees are older.

We think that seeding to clover with the proper use of fertilizers is a benefit rather than a detriment to the ground and the orchard. We know that a thorough, shallow cultivation is recommended for orchards, and this undoubtedly is the correct thing for some localities, but we think that this is not necessary in the most of Minnesota.

Let me say in conclusion that we firmly believe that Minnesota will be in time one of the best fruit growing states in the Union, the right kind of people are behind the movement, and they are bound to accomplish their object.

Treatment of Ground in Adult Orchard.

SETH H. KENNEY, WATERVILLE.

The orchard I am going to talk about contains mostly Wealthy trees. The ground slopes to the north. It has a clay subsoil, and the soil is a rich loam. In the early days the timber was mostly hard maple. In the past nearly fifty years I have lost two orchards on this same ground. Finding some winters seriously injuring when the ground was bare, I commenced to mulch and have kept this up every year since the present orchard was set. The material used for a mulch has been the crushed stalks of the sugar cane. The trunks have been protected from mice and rabbits by a lattice work about the trunks. The cornstalks are placed in the rows north and south and six feet wide. The trees are eighteen feet by thirty apart—I think twenty by thirty would be better. Have had marked success since I have kept up mulching, and I have not seen any serious objection to it.

I have some crab trees I have never mulched, and they have done well. They have more vitality to stand severe conditions and impart hardiness to the tender varieties top-grafted on them, so that success has come in this way for the varieties we could not grow before. It takes experience to find kinds of commercial apples that we can grow by top-working on hardy stocks. I shall experiment largely on the Baldwin, an apple that has brought the grower more money than any other variety. I grew two fine apples on an Alaska tree from a Bald-

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win graft two years old the past season; also Ben Davis on the Gould crab; and have grown Jonathan and Grimes' Golden on Hibernal the second year from the graft. Next season I expect results that will tell of many new varieties on three year old grafts.

For fall of 1907 I sold of Malinda $169.00, all top grafted; of Wealthy apples $669.50; of Transcendant and Duchess, $116.00; total, $954.50.

The President: Have you any questions to ask Mr. Kenney? He has a very nice orchard, and he has some very valuable things in it.

Mr. J. F. Benjamin: Do you spray?

Mr. Kenney: I have not sprayed, but I expect to do so next spring.

Mr. Busse: How old are the trees?

Mr. Kenney: I think they are twenty years old.

Mr. Busse: Do you prune them?

Mr. Kenney: Yes, I prune my trees.

Mr. Busse: When do you do that?

Mr. Kenney: The last week in May and the first week in June. I make it a point to go into the orchard and do the work at that time because I think they heal over better. The trees are in full leaf, and I think I get better results.

The President: Mr. Kenney thinks a great deal of the Gould crab for top-grafting.

Mr. Kenney: That is my choice.

Mr. Tingley: Do the leaves scab any?

Mr. Kenney: We had no trouble with that, but the insects kept piling in on me, and so I put the hogs in, but that would not do.

Mr. Beach: Did the rust affect them?

Mr. Kenney: I mulched my orchard one-half one year and the other half the next. I guess I called the attention of Prof. Green and Mr. Latham when they were at my place to the fact that I had more blight on the trees that were mulched than on the trees that had no mulching on.

Mr. Busse: I would like to ask about how much ground this orchard contains?

Mr. Kenney: About seven acres. The rows are thirty feet apart, but I think, measuring the whole ground, it contains about seven acres. I think it paid, counting out the barrels, about $100 an acre.

Mr. H. L. Crane: Did the mice girdle your apple trees?

Mr. Kenney: I put the slats on, and I do not see any trouble with the mice lately. You have to be careful when you put this mulching on, or the mice may injure the young trees.

Mr. Higbee: How do varieties grown top-worked on the Hibernal compare with the same varieties grown south?

Mr. Kenney: I have only grown them this season, but they were undersized compared with those apples on the table below.

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The President: Now I am going to call for a talk on Mr. Moore right along this line. Mr. Moore has a few points to present along his top-working experience.

Mr. O. W. Moore: I have been top-working in order that I might change the tree from the original variety, and also to test and try the experiment with some other varieties. The Repka Malenka has been discarded from our fruit list mostly on account of being too small for market purposes. It is a good apple, a good keeper, but it is not large enough to be practical. This is the result of the Repka Malenka top worked on the Hibernal (indicating). It is a medium sized apple.

The President: Does it run uniform?

Mr. Moore: Yes, it does. This is the first fruit I have obtained from the Grimes Golden. They are not much larger than on their own stock. They are pretty badly cut up, but it shows that we can grow Grimes Golden in Minnesota by top-working right stock.

Mr. Higbie: Was that grafted on the Hibernal?

Mr. Moore: Yes, that was grafted on the Hibernal. This apple (indicating) was coming into Spring Valley for two or three years and the grower wanted to know what it was named. It had been called the Jessie Budd, but I did not know what it was. When it was brought to me I had never seen it before, but I was not long in finding out what it was, and it proved to be an apple sold from Illinois through that section ten or twelve years ago. It proved to be the Salome apple. This was grafted on the Nelson and top-worked on a seedling tree at Spring Valley, and as for its success in top-working it is absolutely ahead of anything I have ever tried. The grafts put up a steady, stocky, healthy growth and are very vigorous. I put those scions in in the spring of 1906. They grew and made wood that summer. In 1907 they bore about a peck of apples, and these were some of them. I harvested those apples on that plate just eighteen months after I set the scions. If you people have any "sooner" record than this I would like to be informed of it. There is no theory or guess work about this matter, and I have the fruit here to show to prove it as such.

Mr. D. T. Wheaton: Does the Salome tree bear early?

Mr. Moore: I should judge that these Salome trees came into bearing after about eight or twelve years.

The President: I am quite sure it is a tardy tree in coming into bearing.

Mr. Moore: Then there is this about it, it is the best dessert apple we have; I would not except the Wealthy. It holds its freshness and does not deteriorate, and it will keep until June.

Mr. Wheaton: How does the tree stand as to hardiness?

Mr. Moore: Those I have seen are good trees.

The President: It was sold largely through Southern Minnesota, and I get good records.

Mr. Moore: I have the tree in Southern Minnesota; it stands on the prairie, and stands all right.

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Mr. Clarence Wedge: It was distributed by some tree men from Illinois years ago, and I put it in the class with the Northwestern Greening. It does nicely until it bears, and then it takes the very heart out of it. Our trees are going back since they commenced to bear.

The President: Mr. Wheaton, how do they do on your ground?

Mr. Wheaton: They have not borne yet.

Mr. Clausen: I had a friend down in our country that had a very nice orchard of Salome, and yet about the time he expected to get fruit all the trees were dead. I would like to say a word about the Grimes Golden. I had it on the Hibernal two or three years, and then I tried to cut scions. I then found out they were hurt by the winter more or less.

Mr. Geo. J. Kellogg (Wis.): I would like to say in regard to the Salome, better go a little slow. In Rock county it did not do very well with me. In Jefferson county there is an orchard where it is doing well, but I do not consider it as hardy as some of the other varieties.

The President: I will call on Mr. Elliot. He has an apple from a layer of the Wealthy grown on its own root.

Mr. Wyman Elliot: This (indicating) is the first specimen of the result of the layers distributed from the original Wealthy to see whether the fruit has changed any since it has been under propagation. Looking at this and looking at Jonathan gives us the idea that it may have originated from some cross of the Jonathan. Heretofore I have thought it was a Fameuse cross, but looking at this specimen, and comparing it with some Jonathan, I think it may possibly be from that cross. It is a beautiful apple.

Col. G. B. Brackett (Washington): Is that from a layer?

Mr. Elliot: Yes, a root layer. Mr. Ansel Gideon, who is the son of Peter Gideon, brought to our winter meeting a number of years ago and distributed some root sprouts from the place where the original Wealthy stood. I have one growing on the Harry Shuman place, standing from ten to twelve feet high, and year before last it had thirty apples. Year before last it blighted some, but last year it had some good fruit.

Col. Brackett: Do you think growing or cutting from the tree would change the apple?

Mr. Elliot: No, and I will go further. I saw the first Wealthy Mr. Gideon put on exhibition down here at Bill King's fair, and my recollection is that this is the type of apple he showed. I have contended that the Wealthy would change somewhat in propagation, but I am not going to say it is so. This may be something accidental, but there are ten of these trees growing, and we will see whether they will produce the same fruit.

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Treatment of Ground in Adult Orchard.

A. BRACKETT, EXCELSIOR.

This is one of the most important questions brought up here to-day. I have attended these meetings for years, and have heard orchard men recommend thorough cultivation, while others advocated seeding down, and the man who was seeking for information has gone away no better off than when he came here; he did not know which was right and which was wrong. I will tell you of my own experience, and what I have been able to carry out, and I believe the cultivation of an orchard will induce blight and winter-killing. We all know that a tree growing very rapidly is subject to winter-killing more than one that grows slow and for that reason ripens its wood, and we all know that a tree ripening off its wood is less liable to blight. If we seed an orchard to grass, the roots take up some of the surplus moisture on the surface, which makes the root of the apple tree go deeper into the ground, and it is not so liable to winter-kill.

That is my theory. Now I am going to give you some solid facts that cannot be doubted. At Excelsior, Lake Minnetonka, where I live, there was raised a large crop of apples this year. Mr. A. B. Lyman has an orchard that has been seeded down for twenty-five years last fall. That orchard is in first-class condition and produced some 2,500 bushels of apples, from which he realized $2,500. Mr. H. W. Shuman had 1,500 bushels of apples; Mr. Sarver had 1,400 bushels of apples; Mr. Crane had 900 and Mr. Eli Stone 300, making in all about sixteen carloads of apples, and all grown in orchards that have been seeded down for years. Now, while I was interested in the exact facts, and I tried to do it honestly, to find an orchard in the state of Minnesota that has had thorough cultivation and that is in a good and healthy bearing condition at this time, I never could get Prof. Green to acknowledge what was best to do in this matter, so I went over there one day to see what he was doing in his own orchard. I found it was seeded down to grass.

I said to the professor: "Do you believe in seeding down to grass?"

He said: "I am going to plow it up."

Then he gave me that peculiar smile and said: "I am going to plow it up so I can seed it down again." (Laughter.)

There are one or two who tried thorough cultivation in the state. You will find the experience of one of them in the November (1907) number of the Horticulturist, in which he says: "Those apple trees never had any weeds about them; they had clean cultivation. I have

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since thought a great many times that I took too good care of them." He goes on to say that those trees kept on blighting, and by and by they were all thrown on the brush heap. As you will see, he says he has grown four orchards in fifty years, and he has nothing to show for them now. There is one of the best horticulturists in the state who claims that cultivation is the right thing for an orchard, but I honestly believe it will be only a few years before that gentleman will wake up to find that his orchard has blighted and blighted badly. My experience has been this: I had an orchard that I had not seeded down but planted it to raspberries, and I took good care of that

Apple orchard in grass at Otto Wasserziehr's, Aitkin Co.

orchard and kept it well cultivated. A number of the Wealthy blighted so badly I had to dig them up. I lay it to thorough cultivation.

Mr. J. F. Benjamin: At what age do you seed down an orchard?

Mr. Brackett: As soon as it gets fairly in bearing.

Dr. A. H. Street: Do you mulch your trees?

Mr. Brackett: If I seeded down an orchard, I would never take anything from an orchard. I would leave the grass to rot down or mow it down. I do not believe in mulching an orchard only in the fall and winter. Why? Our trees are grafted on seedling roots, and we do not know anything about them; we do not know whether the roots are hardy or not hardy; if we protect these roots in the winter by

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mulching, it is all right, but if we mulch in the summer time, we draw the roots to the surface of the ground, and they are more liable to be injured than if they were deeper in the ground.

Mr. Benjamin: Would you mulch them when young?

Mr. Brackett: I would mulch them in the fall and winter.

Mr. Beach: Will orchards do better if fertilized?

Mr. Brackett: I think the ground is rich enough in your orchard, and that orchard has grown well year after year seeded down.

Mr. Beach: How long would you cultivate a young orchard?

Mr. Brackett: I would cultivate until it came into bearing. As soon as a pear tree comes into bearing it blights to the ground, showing it is more subject to blight after it comes into bearing.

The President: I am going to ask Mr. Wedge to talk on this subject.

Mr. Wedge: I began my orchard experience with the idea that cultivation was the only method to pursue, but I found that in this matter it is like a great many other matters in horticulture, it is impossible to have an ironclad rule to cover all of these questions. My experience with cultivation was this, that if the orchard is cultivated without mulching—and I think Mr. Brackett would have added that if he had thought of it—the life of the tree is endangered by root-killing, especially young trees. If they are left in the bare ground, they are liable to root-kill in the winter if there is but little snow, and if you were cultivating your orchard you would have to look after that. I think nature abhors that kind of a vacuum in an orchard.

There is another matter which forces itself upon my attention that has not been mentioned here, and that is the great loss of soil by washing if an orchard is kept under cultivation. I found it was absolutely impossible to keep the orchard cultivated while the soil was being washed away. The trees would tumble over. I had ditches around my trees, but I had to seed down my orchard. I think we will have to modify our procedure very much, depending upon the character of the soil and the situation. I have thought many times if I had a tract that was absolutely level, as Mr. Underwood has—and Mr. Underwood is an advocate of perpetual cultivation of the orchard—I would try to have it mulched each winter to prevent root-killing, but in my case it is absolutely impossible, on account of the broken condition of the country. On that uneven ground it is necessary to seed down the orchard.

Mr. Busse: I think both gentlemen are correct so far as my experience goes. I have found, as Mr. Brackett says, it is best to cultivate no later than two or three years. I think we have varieties that need more cultivation and richer soil than others. Take, for instance, the Wealthy. If you cultivate it more than two or three years, and especially during such seasons as we had in 1903-4-5, you are going to have trouble, and if you set the Wealthy on good soil, you can cultivate them no longer than three years at most, but the Duchess, Hibernal, Patten Greening, Okabena and others can be cultivated four, five and six years, and they will not blight on that account. I always

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thought that trees needed no fertilization, but they do need it. If you do not feed them, they will become weak, but the Wealthy, of course, does not need so much. Of the Transcendent you would have no trees at all after cultivating five years.

Mr. Brackett: In order to get an expression from those who have had experience in growing orchards in Minnesota, I would like to have those who are in favor of seeding an orchard as soon as it gets into bearing, signify it by raising their right hands.

Mr. Radabaugh: The happy medium between this cultivation and non-cultivation or seeding down is to apply a mulch. Gentlemen, you have got to mulch your cultivated ground in order to get any results. I know in the city limits there are trees that get no mulch and are cultivated continually, and the growth is large, but we have to take into consideration the soil we are dealing with, and if you take it on sandy soil seeded down it will take a long time before you have any fruit in Minnesota.

Mr. Kohler: Is this cultivation carried on an entire year where a cover crop is used?

The President: It is a question of clean cultivation during the year. To me it appears something like this so far as this matter of cultivation is concerned. We must get a reasonable growth of our tree, and if we cannot get it in sod, it is far better to cultivate. I would try to get a reasonable growth of my trees if a cover crop is to be planted. In some conditions it is desirable to cultivate, and in others it is not. Mr. Brackett says we have the orchard seeded down at the farm. We have seeded the Russian orchard down. I thought we had better seed the old Russian orchard down and then cultivate it, and then seed it down and cultivate it again. I think this matter has to be decided according to the different conditions.

Mr. Larson: Several years ago I planted an orchard and cultivated it five years, and now it has been seeded down for two years and is doing very nicely. I set out an orchard two years ago of four hundred trees and intend to cultivate that and then seed it down.

Mr. Brackett: I think I did recommend mulching an orchard in the fall and winter. When you mow the grass, leave it on the ground. I think I expressed that.

Mr. Wedge: I would now like to have that show of hands that Mr. Brackett asked for of those who have had experience in cultivating and also seeding down an orchard.

A vote was then taken, which resulted in twenty-nine voting for seeding and six in favor of cultivation; thirty-four expressed themselves as having no preference.

Mr. J. P. Andrews: Mr. Underwood always advocates clean culture; I would like to know whether his orchards are on sandy soil.

Mr. John Nordine: One orchard is on sandy soil altogether, and we cultivate that. We also have an orchard on the hillside, and we find it difficult to cultivate that. We tried to cultivate it up and down the hill, but we are taking it the other way now. In winter we draw a mulch into that orchard. It is a heavy soil, and we mulch in the winter time.

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Apple Orcharding in Fillmore County.

O. W. MOORE, SPRING VALLEY.

The planting of apple orchards in Fillmore county has been carried forward of late years much more rapidly than those who are not acquainted with the facts have any idea of. Beginning with the early '90s, this planting has been done largely through the efforts of Mr. C. E. Snyder, of Preston, a nurseryman and fruit grower himself. He put in a great deal of hard work in the early '90s to induce the people to plant fruit trees but with poor success.

Finally he began the work on a different plan, the working features of which are mainly as follows: He would select a section of one-half dozen or more adjoining farms that contained good orchard land, and go to the owners of those farms to solicit orders for fruit trees. When they refused to listen to him, then he made them the following proposition: He would select the plot for the orchard and the owners were to prepare the land and dig the holes, and he would furnish the trees and see to it that they were properly set out, and he would replace all dead trees for a certain length of time for a special price agreed upon. He was willing to put himself under contract as above, but in drawing contracts he bound the farmers to their part of the agreement also. Under this plan Mr. Snyder obtained orders for a number of good-sized orchards. But he tells me that before delivering time for those fruit trees came that a large number of those farmers came to him to have their orders cancelled. But as there was a forfeit for the faithful carrying out of those contracts by both parties, all cancellation was thereby cut off, and the trees were planted. Right here is the far-sighted plan of the planter. They were planted in groups of adjoining farms, which facilitated the planting and now adds very largely to the convenience of marketing and shipping of the fruit.

Here is a point that to the writer's mind is worthy of note by our local nurserymen: Group your plantings so much as may be, thereby making delivery more easy and the harvesting of the fruit more advantageous, both to the buyer and seller.

The writer thus far has been relating a short history of the fruit interests of Fillmore county for about fifteen years past. It has been very discouraging work to get the people to see their interests along the lines of fruit growing. One reason for this is that there are very few men that are growing apples in Fillmore county today that are horticulturists. But they are beginning to fall into line now. In the year of 1906 there were but seven members belonging to our state horticultural society, while for the year 1907 there were twenty-five.

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The writer has been investigating of late in order to ascertain as near as may be the number of apple trees that have been planted in the county within the past twelve years, which is as follows:

YEAR.	TREES.	YEAR.	TREES.
1896	3,420	1902	5,150
1897	5,700	1903	6,800
1898	10,250	1904	4,500
1899	6,250	1905	3,900
1900	3,700	1907	10,700
1901	6,710	1906	8,250
		Total	75,330

The above figures are very nearly correct, as the bulk of them were taken from Mr. Snyder's delivery books.

I would say to those contemplating planting commercial orchards to plant them as near as possible in connection with adjoining neighbors—and then plant the right varieties (the leading shipping varieties with us are Wealthy, Patten's Greening and Duchess)—and there is no question but what you will have plenty of buyers for your fruit. But the buyers who come here to buy apples do not care to look very much for scattered orchards from five to ten miles apart; they want them as near adjoining as they can get them.

There were six buying apples in our county last fall, and many letters of inquiry were received asking for information as to whether apples could be bought in carload lots. Mr. Snyder bought for those buyers from other states. The growers furnished the barrels and picked the apples. The buyers did their own packing. The growers delivered the fruit at the railroad station at the price per barrel agreed upon.

PUT THE BEST FOOT FOREMOST.—I believe that the fruit growers are to blame to a considerable extent, for not placing their names on their packages. We should not be ashamed to put our names on the packages, if these are properly put up.

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Question Hour on Strawberries.

CONDUCTED BY A. BRACKETT, EXCELSIOR.

Mr. Brackett: If I was living on a farm, or at any place where I was in a position to do so, and did not plant fruit for my family and myself I would feel like a certain Irishman. A Scotchman, an Englishman and an Irishman were talking together about their respective countries. The Scotchman said to the Englishman, "If you were not an Englishman, what would you be?" The Englishman to be complimentary, of course said, "I would be a Scotchman." Then the Englishman said to the Scotchman, "And what would you be if you were not a Scotchman?" and the Scotchman of course replied, "I would be an Englishman." Then one of them turned to the Irishman and said, "And what would you be if you were not an Irishman?" The Irishman promptly replied, "Oi would be ashamed of meself." (Laughter) And so I would feel, I would be ashamed of myself if I did not plant small fruit for my family and myself.

In regard to strawberries, any of you who can have room enough to set three hundred plants can raise enough for his own use, and the expense required for setting and caring for three hundred strawberry plants is very small. The next spring take out sufficient plants along your rows to set another three hundred, and after your old bed is through bearing plow it under. It does not pay to fruit the bed after the second year, although if kept clean you may get a crop the third year; but the extra expense of keeping the weeds out is usually so great that it pays better to replant the bed, especially where they have quack grass and other bad weeds, and for that reason it is best to renew the bed every year.

Now a word in regard to varieties: I have had twelve years' experience in this state in the strawberry business and had experience in Iowa and Dakota, and in those twelve years I have tried about all the varieties. It is very rarely that strawberries pass through the winter without more or less injury to the roots. I used to think it was on account of the dry season that the fruit crop was cut short, but I have found that it is on account of the injury to the roots by the winter. If strawberries go into winter quarters with the ground dry they are more subject to injury. Strawberries should be cultivated thoroughly, at least once a week up to the very time the ground freezes, and in cultivating them that way you get the dust mulch. I have stopped cultivating in September, and then hard rains came that pounded the ground down hard. Then it turned dry and froze and the earth cracked open, leaving the ground in poor shape to stand the winter. A dust mulch for strawberries or any other fruit is of great benefit.

Prof. Walden: Does that injury occur every winter even with the dust mulch?

Mr. Brackett: Yes, I do not know of any variety of strawberries, except we have a heavy covering of snow in the winter, that does not take injury.

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Prof. Walden: How would you discover the injury in the roots?

Mr. Brackett: Cut the roots in two and you will find them black or badly discolored. There was a case in South Dakota of a man who was express agent in a certain town, and he was growing strawberries as a side issue in a small way, and one year he sold fifteen hundred dollars worth of strawberries. He then resigned his position as express agent expecting to go into the business on a larger scale. He resigned his position, took his wife and family and went to Florida for the winter. He expected to spend his winters in Florida and his summers in Dakota. That was the first year I was in Dakota. I wanted to get some strawberry plants and thought I could get them from him. In the spring of the year I went over to examine them. I dug up some and examined the roots and found they were badly injured. The tops were nice and bright and were apparently all right. I went over to the office and inquired when he would be at home. They told me he would be home soon. A few days later he returned, and I went up to see him. His wife was there and said that he was not in. Then she asked me if I was the gentleman who said their strawberries were dead. I told her that I was the man. She said that they were just as bright and nice as they ever were, that the leaves were bright and green and that I was mistaken. The end proved that I was correct, because in the spring when warm weather came they started a sickly growth but were an entire failure, not ripening a berry. He has since put in an irrigating plant and is doing comparatively well with his strawberries. What we need here in Minnesota is a hardy strawberry. Prof. Hanson has a strawberry that will stand forty below zero without covering. When we get a strawberry that is hardy then we will grow large crops of berries.

Prof. Walden: We have been working with the Senator Dunlap in the Red River Valley, and we do not care whether the roots kill or not.

Mr. Brackett: The Senator Dunlap does well everywhere, there is scarcely ever a failure reported. Back in New York it does well. I will say this, the Senator Dunlap is one of the best berries to stand the winter that we have, but the Senator Dunlap in the twelve years I have known it has root injured more or less. One year I raised eleven thousand quarts on one acre, but that year they had a snow covering so that the ground hardly froze.

Prof. Walden: Our soil in the Red River Valley is moist, and it does not injure with us whatever.

Mr. Brackett: Strawberries will winter better on moist ground than anywhere else. I have a piece of marsh ground that is good to raise plants but not good to raise fruit, for the reason that they go to vines.

Mr. Richardson: What variety would you recommend for the three hundred plants?

Mr. Brackett: I would recommend the Senator Dunlap.

Mr. James Harrison: How heavy do you mulch?

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Mr. Brackett: Only so I cannot see the plants. I have always followed the plan of mulching the plants when the ground was frozen so a team would not break through, but I came to the conclusion, I would start to mulch them when nature mulches, that is when the trees drop their leaves. But do not mulch them too deep; you can mulch them too deep and thus smother them out.

Mr. Harrison: Is it a good idea to put a secondary mulch on when the ground is frozen solid and take it off in the spring?

Mr. Brackett: That might be advisable in a small way.

Prof. Walden: We use a manure spreader before the ground freezes and then later put it on thicker.

Mr. Brackett: I should think it would be an excellent idea to put on a thin coat rather early.

Mr. Pabody: Some plants throw out more runners than others.

Mr. Brackett: That is the trouble with the Senator Dunlap. I find it is a great strawberry for making plants. If you find that they are getting too thick take an iron tooth rake and rake across the rows, raking out the small runners, and then cut them off. In that way we can keep them thinned out so they will not set too many plants.

Mr. Pabody: I never understood the process of mulching strawberries was to keep them from freezing.

Mr. Brackett: It is not the idea to keep them from freezing, but it is to keep them from alternately thawing and freezing, that is the idea.

QUESTION.—"Is it practical and all right to sow oats between the rows of strawberries for a mulch before the crop is gathered?"

Mr. Brackett: I think the sowing of oats in strawberries would probably retard the growth, and I would not consider it as valuable for a mulch as I would straw or hay, something which would allow the plants to get the full benefit of the soil and permit them to ripen up.

Mr. Husser: I think it is not a good thing to allow anything to grow between any crop, because it takes the vitality out of the soil and takes away from the growing plant just what it needs.

Prof. Green: Well, suppose you turn it in again?

Mr. Husser: I think it would prevent the plant from growing as it should. Every plant wants all the sun and air it can get to make it a vigorous plant.

Prof. Green: I think that statement ought to be qualified a little. I think somebody ought to say something about cover crops right here. I agree with Mr. Brackett that oats are not a practical thing to sow in strawberries, and I also agree with Mr. Husser. If Mr. Husser had agreed with what Mr. Brackett said simply it would do very well, but when he says we should not grow anything with other crops I think I shall have to take issue with him. That brings me right up to speaking of a kind of cover crop that can sometimes be used to excellent advantage. It is customary to sow oats along about the first of August to protect the ground. It is customary with the peach grower in Michigan to

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sow oats or some other crop in his orchard and let it get up about a foot high, which will put it in about the right condition to catch the snow, so it will stay on the ground. With the leaves that fall on the ground and the oats, they form an excellent cover for the peach orchard, and it is grown at a time when the growth in the peach orchard is practically completed for the season and does not interfere with the growth of the trees. But in the case of a crop like strawberries, where the growth is really made in the early autumn and continues quite late, I think there would be a difference, although there may be some good in it.

Mr. Husser: Strawberries are a low growing plant and there is a difference between a strawberry plant and a tree.

Prof. Green: And yet some of the finest strawberries that ever grew were those grown in partial shade.

"What is the history of the Moran apple that was shown at our meetings for several years?"

Mr. Philips: This is the Moran apple (exhibiting an apple). I have shown it here for six years, and it has never scored higher than sixty per cent. It began to bear nine years ago. A number of men here that are judges of fruit say it is as good as the Ben Davis, and some say it is better, but it only scored sixty with Mr. Elliot and Prof. Green. It began to bear nine years ago, and I went over to see it, and every year since I went to the tree and got a few scions. It has borne for nine years successively. It bore about a peck the first year and has continued to bear ever since. This year it has borne three barrels of apples, and that is more than any other kind of tree bore. I picked up some apples from under the snow last Wednesday, the 28th of November. It is full of fruit buds for next year, and last year it was full for this year. Aside from its productiveness and hardiness it is a beautiful tree, with horizontal limbs. Although it tested only sixty per cent, I think it is valuable for some locations. There have been a number of inquiries about it. This is the man I refer to in my book as doing what no other man in Wisconsin or elsewhere has ever done to my knowledge. This man wanted some apples, and he walked to Springfield with one hundred apple trees on his back, eighty-five yearlings and the rest were three years old. We claim the Lord helps those who help themselves, and I believe the Lord gave him this apple as a reward.

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SECRETARY'S CORNER

A Word from Prof. Hansen.—A postal card from Prof. Hansen received recently, written from Samara—somewhere in Asia, haven't found out just where yet—speaks of the progress of his work. It is interesting to receive even a word from an old friend so far away.

County Fair Exhibitors.—Very excellent fruit is being shown at the county fair exhibits throughout the state, even better than that exhibited at the state fair, on account of the further opportunity for ripening. Members of the society in charge of fruit departments at these fairs should secure from the secretary of the State Horticultural Society a quantity of the pink folders issued by the society for distribution at the fair and take advantage of the opportunity to secure members for the society as well as strengthen the organization by this distribution and by personal conference.

Removed to California--Among the faces met at the state fair that we do not often see was that of Mr. H. H. Heins, one of the old and staunch members of the horticultural society. After a winter or two spent in California he has finally removed there and expects to make his home on the Pacific Coast during the declining years of his life. The older members will all be glad to hear of Mr. Heins, who still retains his home place in Olivia, in this state. He is in excellent health and has apparently many enjoyable years before him. His present address is 4033 Trinity St., Los Angeles, Cal.

Another prominent member whose permanent home is now in California is T. T. Smith, living now at 701 Center St., Redlands, Cal. He has a fine large young orchard on his home place in Dakota county in this state, cared for by his son L. W., which he revisits at frequent intervals. We had the pleasure of meeting him also at the state fair.

Japanese Hybrid Plum.—Mr. O. W. Moore, of Spring Valley, sent to this office—also to the State Fair—samples of a new hybrid plum, a probable cross between the DeSoto and a Japanese variety. The fruit is of good size, approximating an inch and a quarter in diameter, very dark red, firm, free from astringency and of excellent quality. If the tree proves to be hardy, it would seem to be well worth propagating. As to its origin Mr. Moore speaks as follows:

"First there were pure Japanese scions grafted on two limbs of a DeSoto. The first fruit from the growth of those scions was six plums, and the plums that I send you are from a seedling from the pit of one of those plums. The DeSoto and the growth from the scions were in bloom at the same time with no other plum trees near, so it is about as sure as can be that this plum is crossed with the DeSoto. It has proved thus far as hardy as any of our natives and is the most productive variety that I have in my orchard at the present time.

Seth Kenney's New Tree Protector.—"I have bought welded galvanized iron wire twenty inches high, to cut into strips twelve inches high and nail each side of the twelve inch strip to a board four inches wide and twenty inches long, to protect my sixty-four two year old seedlings from mice and rabbits. By comparison I found the little trees needed sunshine. I trimmed the two year old trees to whips so I could put this protector over the top. Every one that I have seen is leaving out. On

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this four inch strip I plan to fasten two good sized wires to hold them up. This wire screen costs six cents for each tree. I can get the best of the sun by setting the board side to the southwest. It is the most complete tree protector I have ever seen. In case the tree had a top, it would need to be nailed around the trunk of the tree. This wire strip, mesh three to one inch, twenty inches high, is just right."

PROGRAM OF THE ANNUAL MEETING.—This program is now in process of making and rapidly approaching completion. It will be more fully diversified probably than any other program ever issued by this society. A number of demonstrations, question hours by leading horticultural authorities, short lantern slide lectures, short programs by the auxiliary societies, and every hour filled up with something of practical value and interest are certain to make this meeting a notable one. Members should already be planning to attend from Tuesday morning, when the president will deliver a stirring annual address, until the last hour of Friday afternoon, the most interesting time of the whole session. The railroad rate is a reasonable one, special hotel charges will be secured, and everything done to make it pleasant and economical for members attending. Come and bring the wife, or the oldest son or daughter and make a winter outing of it. Don't miss it!

SAVE FRUIT FOR THE WINTER MEETING.—Have you noticed the list of premiums offered for fruit exhibited at the coming annual meeting, to be found on page 359 of the September Horticulturist. The amounts offered are more liberal even than the liberal premiums offered in previous years, and every member planning to attend the meeting and having the fruit should certainly be represented in the exhibition room. Special attention might be called to premiums offered on top-worked apples, and also for pecks of apples. In the latter case there is $50 offered to be divided prorata amongst the exhibitors of pecks of apples. Any kind of apples may be shown in this competition, and we hope for a comprehensive display under this offer.

Don't fail to note the new offer of $25 to be divided amongst the exhibitors of bushel boxes of apples. These boxes of apples are to be sold at the meeting for the benefit of the Gideon Memorial Fund.

This should be the largest display ever made at our annual gathering, and if the members are in earnest to make it so the comparatively light crop will not interfere with it.

DEPOSIT OF THE GIDEON MEMORIAL FUND.—This fund has finally been deposited, under date of Sept. 23rd, with the Board of Regents of the State University, there being some delay necessary to secure the acceptance of the deposit by the executive committee of the Board of Regents. A receipt for this fund as signed by C. D. Decker, secretary of the Board of Regents, reads as follows:

"Received of A. W. Latham, secretary of the Minnesota State Horticultural Society, an order on the treasurer of said society for five hundred dollars ($500.00), this amount when collected to be invested by the Board of Regents of the Minnesota State University in some safe fund, the interest on which shall be payable annually to the professor of horticulture of the Minnesota State Agricultural College, at such time in the year as he may desire, to be used at his discretion in prizes for the encouragement of work in the horticultural department of said college. This sum of money is to be known as the "Gideon Memorial Fund," and at the annual distribution of prizes therefrom this fact shall be referred to by the person making the distribution and some suitable reference be made to the life and work of Mr. Peter M. Gideon.

"Notification of each annual payment of interest to the professor of horticulture is to be made to the secretary of the Minnesota State Horticultural Society."

It is understood that this fund will be invested in "gilt edge" bonds drawing five per cent, which will yield an annual revenue of $25.00, and each payment of this sum to the professor of horticulture at the Agricultural College will be accompanied by a statement as to the purpose, etc., of this fund, so that the matter may be duly presented to the classes to whom these prizes are offered.

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CHAS. HARALSON, SUPT. MINNESOTA STATE FRUIT-BREEDING FARM, AT EXCELSIOR, MINN.

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THE MINNESOTA HORTICULTURIST

Vol. 36 NOVEMBER, 1908. No. 11.

How Members May Assist the State Fruit Breeding Farm.

CHARLES HARALSON, SUPT., EXCELSIOR.

The members of Minnesota State Horticultural Society and Plant Breeders' Auxiliary have been and are at present doing a whole lot of good work along horticultural lines, and what pleases me most is the interest they are taking in plant breeding. Cultivation and good care will help trees and plants to give better results temporarily, but by plant breeding varieties may be originated which will be hardier and more productive, more disease resistant and do better for all time. Hardiness of trees and fruit buds, in my opinion, is the most necessary thing to work for. We are near the northern limits of fruit growing and therefore must grow seedlings from our hardiest varieties to secure best results. The possibilities of plant breeding can hardly be estimated. It would not be difficult for a man to breed a new wheat which would produce one more grain to each head, or a corn which would produce an extra kernel to each ear, or an apple, cherry or plum that would produce one more fruit to each tree, etc. This extra productiveness looks very small, but it would amount to a lot for the whole state.

The plant breeder, before making combinations, should with great care select plants best adapted to his purposes, and if this is done many years of work and much needless expense can be avoided.

There is a large field for the plant breeder to work in. We need hardier cherries and better keeping varieties of plums for the market, we need long keeping varieties of apples and many other fruits. How are we going to get these? Only through the patient and hard working plant breeder.

There are a whole lot of native wild fruits which can be improved by growing seedlings or by crossing with tame varieties. We have the wild native black and red raspberries, the wild grape, gooseberry and red currant, which are worth improving by crossing with tame varieties. We also have the western sand cherry, which the Compass

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cherry and South Dakota No. 7 are crosses from. The sand cherry will with careful work and under good conditions cross with many other species of fruits, such as the California, the Japanese and our native plums, and also with peaches, apricots, nectarines, sweet cherries and many others. The sand cherry is a splendid thing to break up the different types of stone fruits. It is hard to predict, but my opinion is that we shall have a whole lot of varieties of new and valuable fruits from such combinations. The sand cherries have a tendency to early ripening its fruit, and this I think a good point, at least for farther north, where seasons are short.

To get the best results in fruit breeding a large number of varieties of all fruits adapted to this region should be planted as soon as possible on our fruit farm.

Now I will ask the members of this society for their assistance to our fruit breeding farm to make it a success. Let us work together, and in time we are bound to have better fruits, all in new forms, sizes, color, flavor, and less waste—fruit trees, grape vines and berry bushes which will stand our severe winters without getting hurt or winter killed. This is within the reach of the ordinary plant breeder.

I noticed at the state fair last fall, and also down in the basement at this meeting, a large number of new seedling apples, originated by members of this society. It probably would be too much to ask to get a stock of these seedlings, and also of many others, if this can be done. It would assist our fruit farm very much.

It will be perfectly safe for the members and others that may have seedlings to have them tested with our standard apples. They will be taken good care of, and it will help our plant breeding; and the same thing, I would say, of all other fruits. The members have been assisting in getting this fruit farm started, but let us not stop there. This organization is one of the largest of its kind in the United States, and we should also have the largest fruit breeding establishment. It takes a considerable lot of means to carry this on successfully, which should be provided for, from time to time, to purchase suitable material, and to import from foreign countries, trees and plants which would be suitable for plant breeding.

Just as soon as we get started with our work we shall be glad to have you come and visit the fruit farm as often as it is convenient for you to do so, and I also like to keep in touch with all of you.

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Capt. A. H. Reed: What has been done so far at this new fruit farm?

Mr. Haralson: The new farm has just been started, and the only thing that has been done so far has been in the way of getting ready for next year's work. We are doing some building, putting up a greenhouse and have nearly finished a dwelling house, and we have just about finished a cold storage cellar. A barn will be built a little later. We are getting together quite a number of seedlings of different fruits that come from the experiment station. Prof. Green has been doing some plant breeding of some seedlings, but I could not tell what they are. Mr. Wyman Elliot has also sent out some seedlings.

Capt. Reed: Whereabouts is the farm located?

Mr. Haralson: The farm is located about five miles west of Excelsior.

Mr. A. J. Philips (Wis.): Do I understand you to say you would like to have scions sent you from seedlings to experiment with, or seeds and you would plant them?

Mr. Haralson: We would be pleased to have you do both. We have quite a lot of space we would like to fill up as full as possible.

Mr. O. F. Brand: I would like to offer one suggestion that possibly might assist the experimenter, and that is this: When your apple trees are bearing heavily look them over carefully and pick out the trees that are bearing the heaviest crop. You need not pay so much attention to hardiness as to productiveness. Go to the trees that are bearing the heaviest crops and select the apples which careful scrutiny will show you have been cross-fertilized. Nature has done that, God has done that, and if you will only learn to do that one thing, to pick out the apples which nature has cross-fertilized, you will get the same results as those which our friend has told us of. It is said seventy-five per cent of the good things come from private individuals. Nature has done the work. If you are a careful observer and will look your apples over carefully, you can soon learn to tell the cross-fertilized apple. You will not find them at the state fair, because, as a rule, they are not perfect samples of that particular variety. You can see a little difference in the stem and in the form of the apple that shows the variety, but still there is a marked difference, and if you will look for those apples you will find them. Save the seed from those apples, and if you are a person who does not know much about seedlings send them to this station and have them grown there, and you may furnish something which may produce the very best fruit.

The President: If you send anything to the station it will be protected. Nothing goes out without the permission of the owner.

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Growing Strawberries on the Prairie.

G. A. ANDERSON, RENVILLE.

The growing of strawberries on the prairie has been very successful for many years past, with the exception of 1906, when there was a light crop, due to injury to the roots of plants the winter previous. For many years we have had an abundance of moisture, which is essential to growing nice, large berries and plenty of them—in fact, where beds were planted on low land there was too much moisture for best results. The failure of the 1906 crop, I think, was due to ice that formed over the entire fields, from a heavy snow that melted during the winter. This ice remained for a long time on the beds and, I believe, smothered the plants. The beds were well covered with straw.

The first thing to consider in growing strawberries is to select a location for the field. This should be reasonably high and well drained land, almost level, just enough slope to drain off any surplus water. The objection to hilly land is that during heavy rains the soil will wash and cover the plants.

Most of the prairie soil throughout western Minnesota is naturally rich, but if not rich enough to produce a good crop a coat of manure should be applied the previous year and the ground planted to some cultivated crop, such as corn or potatoes, and kept well cultivated and free from weeds. .This will leave the soil in good condition to plant strawberries in the following spring.

Before planting, the field should be well plowed and harrowed, so the soil will be fine and well mixed. After this is done, the field is ready for marking. Last spring I planted my strawberries with rows four feet apart and plants three feet apart in the row, cultivating both ways until plants commenced to run, after which I cultivated only one way. This I found to save very much hand hoeing, and with varieties like the Warfield, Dunlap and others that run freely I got a good matted row by fall. In a dry season the plants perhaps would not grow together at this distance, but when they are grown for market I do not think that any objection.

Plants should be set as early in spring as the ground can be well prepared, the earlier start the plants get the better. For setting plants I use a hoe with a short handle, the blade of which has been cut to about four inches wide. This in well prepared soil I find to be a quick way of setting plants. All you have to do is to thrust the hoe down in the ground, pulling it towards you a little, and you have a

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hole deep enough to set the plant in. The roots of the plant, if very long, can be cut back some. Then spread them out and set firmly, so that the crown of the plant will come even with the surface, being careful to set so all of the roots are covered with soil, but not so deep that the crown will be covered over.

Where berries are grown commercially I think it is preferable for one to grow his own plants, being careful to keep the different varieties separate. I have found through experience that strawberry plants after being shipped, even if handled carefully, that there is always a considerable percentage that die, and then there is the danger of getting plants not true to name.

G. A. Anderson, Renville.

After the plants have been properly set, they should be cultivated at least once and sometimes twice a week during the entire growing season. After every heavy rain, so soon as ground is dry enough it should be cultivated so as to keep a dust mulch at all times to conserve the moisture. For cultivating I use a drag-tooth cultivator and also a five-shovel one-horse cultivator.

After plants start to run, the runners are turned into the row and the plants allowed to grow and form a matted row two feet wide. The first runners are allowed to root, as they make the strongest plants by fall.

For insects that eat the leaves of plants I use Paris green.

In the fall, after the ground freezes to a depth of two or three inches, I cover the field with straw that is free from weed seeds. There are other kinds of covering material that are good, but with us on the prairie straw is the cheapest covering. They are covered to a depth of two or three inches, or enough so plants do not show through. If there is much freezing and thawing in the fall, it is an advantage to apply a very light covering early, and then after the ground freezes hard a heavier covering can be applied.

In the spring, when the plants show signs of sprouting, the most of the covering is raked off the rows and left between them to keep the berries clean and also to hold moisture in the soil and prevent it from baking. If the field has been kept perfectly clean the previous year few weeds will appear, and those that do can be pulled out.

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In regard to varieties, will say that the Warfield has given me by far the most and best berries per row of all the varieties that I have tried, and I have tested a good many kinds. I plant three rows of pistillate to one of staminate.

After we have come so far that berries are ready to pick, it may seem that there is not much left to do, but that is not so, for with a good crop of berries if the picking and marketing are not looked after it may be a financial failure. Berries for home market should be left on the vines until ripe and picked when dry, if possible, as they will hold up better.

After being picked they should be placed in the shade at once, not allowing them to stand in the sun. Nothing but clean boxes should be used, and they should be well filled with clean berries when leaving the field. Quart boxes should be used and only once. I have used the folding box and find it satisfactory.

The berries should be hauled to market in a spring wagon, and they will arrive in good condition, after which they can be sold to the dealers or direct to the consumer, the grower having to decide which method will bring him the best results.

Mr. C. C. Hunter: How long do you continue cultivating strawberries both ways?

Mr. Anderson: Until they start to make runners five or six inches long. It saves a great deal of hoeing.

Mr. A. O. Hawkins: Don't your strawberries run out the same as potatoes?

Mr. Anderson: I would not plant them in the same place unless I had a crop between.

Mr. W. A. Buggs: I wish some of you with experience would answer that question as to planting strawberries, potatoes and other crops.

The President: Prof. Hansen, will you give us your views on that matter?

Prof. N. E. Hansen (S. D.): I think the best experience is to have something in between on account of weeds and other troubles. They seem to run out, and that means that the plants are lowered in vitality and get full of weed seed from the mulch and so on, and it is better to start over on new land.

Mr. A. O. Hawkins: Seven years ago I got a shipment of splendid strawberry plants from Wisconsin, and in planting them I noticed they were twice the size of those I had grown, and I thought it was probably the difference in the soil.

Mr. Peter Larson: We are often told that plants should not be grown nearer together than eight inches, but we are not told how to prevent them growing thicker, and I would like to have a few suggestions on that point.

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The President: How do you do it, Mr. Larson?

Mr. Larson: I don't think I would recommend my way, and that is the reason I would like to learn some other way of doing it. The method I use is too slow. I have used a hoe to cut out the runners to a large extent, but it is too slow.

Mr. J. M. Underwood: A good way is to have a rolling coulter, and after you have allowed the runners to run as long as you think they should, you can run along the row with your coulter and cut off the runners, but you must have a sharp rolling coulter. In that connection, I do not think it pays to allow plants to run all they want to. Plant early and have your young plants start as early as possible, and after they have formed enough young plants to make a good matted row—if you have grown them that way—prevent the further setting of plants and throw all the vitality and strength into the plants already started. The weak plants will not amount to anything for fruiting, and the stronger you have the fruiting plants the better.

Mr. Larson: My trouble has been to prevent plants from setting in the row. I understand how to keep them out between, but how to keep them thinned out in the row is what I want to know.

Mr. W. S. Higbee: I have grown strawberries for ten years or more, and this matter has troubled me more than any one thing in the growing of strawberries, to get enough strong plants and not too many, and I will say I have not found any method other than to get right down with the hands and tear them out to keep them from getting matted in the row. I get good sized berries that way, and it pays.

Mr. J. W. Murray: To take a common garden trowel and run it along the roots is a good way to cut out the plants.

Mr. S. D. Richardson: I never could succeed in getting them out except with a hoe, and in that way I can cut them out here and there where they are too thick.

Mr. Murray: I have used a narrow hoe blade; it saves stooping.

The President: There has been nothing said about covering strawberries. There was something said about root-killing and weakening of plants in winter, but it seems to me this matter of covering is an important matter. Of course, we can use Prof. Hansen's method and let them die. (Laughter.)

Mr. A. A. Johnson: I set my strawberries either back of a fence or put them in some place where snow will drift in, and use no covering. Two years ago we had ripe berries on the first day of June, two weeks ahead of my neighbors who covered or used any other method. Mine were covered with a snowdrift. A year before the potatoes were covered with snow to such an extent that they did not freeze.

Mr. Anderson: We cannot do without covering, at least not on the prairie.

Mr. A. E. Fullerton: I have raised strawberries myself, not in a commercial way, but for our own use, and I have tried a good many kinds. The kind I like the best is the Clyde, and I also like the Warfield. I have five seedlings that I think are as good as any. I generally cover my strawberries in the fall with clean straw, as clean as I

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can get. Those seedlings I spoke about I am going to cover one-half and leave the other half uncovered. In the spring I generally rake off one-half of the straw and leave the other half for a mulch between the rows during the season. I have had very good success in the use of that method.

Mr. M. L. Gjestrum: I believe where you live it has not been as dry as where I live. Where it is dry, it does not pay to cover them because they are already dead. Lack of moisture does the injury.

Mr. George J. Kellogg (Wis.): I do not believe I will ever let a discussion on strawberries go without getting in a word. I don't think I ever heard a better paper than Mr. Anderson's, but he left out all the varieties except the Warfield. He plants three rows of pistillate and one row of perfect, and he did not say what that was.

Mr. Anderson: I use the Bederwood, the Splendid and some Dunlap.

Mr. Kellogg: Those are all good kinds. Just a word in regard to the question about runners where they multiply after you get them wide enough. You can take the garden rake and go through the row or take your fingers and pull off the runners, but where you get the runners too thick, as in the Warfield or the Dunlap, they will pile in until they are not more than two inches apart, and where you get them as thick as that you must have some way of pulling out the runners.

Mr. F. H. Boardman: I have heard a good deal about how to grow strawberries at different horticultural meetings, but I have failed as yet to hear one word as to how to grow a good strawberry. It seems to me the strawberry is degenerating and has been degenerating for a number of years. I have not raised them for some ten years because I have had no land, but, living in the city and being a great lover of strawberries, our family has tried to get good strawberries from about the first day of May until the end of the season, but for the last five years all the strawberries that have come into our home might better be named a vinegar berry, because they are absolutely unfit to feed a civilized man. (Laughter.) I think that every fruit man who raises a berry does so with the idea of being able to ship them to Japan and back if necessary. I think he has succeeded in raising that kind of a berry. Laying joking aside, I should think the sale of berries would drop off on account of the sour quality of the fruit we are raising.

Mr. R. A. Wright: When we compare the quality of our strawberries to-day with what the Wilson was ten to fifteen years ago, it seems to me the strawberry is very much improved over what it used to be. He simply fails to get a good strawberry.

Mr. E. E. Miller: There is another point I wish to make. I have grown a few berries during a number of years past. I dropped quite a number of varieties because the close buyers would not buy them; the color was not right, and the flavor was not right. Some people refuse a strawberry because the color is not right, and because they do not hold up long enough, and then they go down on the market and buy some highly colored, inferior berry from some "sheeny." I

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know if he had bought such berries as our friend Higbie and others are taking down to Minneapolis, such as the Dunlap, the Warfield, the Glen Mary, the Marshall and that class of berries, that are perfect, he would have got a good berry, and he would not have got any more acid than he needed. (Laughter.)

Mr. Boardman: I do not claim to have bought them for commercial purposes. I bought them principally at Chapman's and Yerxa's and other leading grocers in the city. I cannot tell you what I found.

The President: There is some justice in what Mr. Boardman says. We do not get the highest excellence in the strawberry, and on the other hand our dealers want a berry that will keep in good condition long enough to sell. Some of the best varieties cannot be shipped but they can be grown in the home garden.

Mr. Wyman Elliot: There is one point in that paper that might be touched upon. He spoke of planting in the fall. I would rather recommend spring planting than fall planting, because with fall planting we cannot get a full crop the following year.

The President: Do you recommend spring cultivation the second year?

Mr. Anderson: No, I never practice it.

Mr. A. Nelson: He spoke of having a matted row two feet wide. Is that the best system? I see some growers advocate the hedge row, and I would like to know which is considered the best. I would also like to know whether he grows more than one crop from the same bed.

Mr. Anderson: I generally do not depend on more than one crop from the same bed. The second crop is full generally of weeds, and you cannot do much with them.

Mr. Kellogg: I have practiced almost everything, even failures, and I did not get the satisfactory results from the hedge row that I expected. You cannot get the quantity, and the quality is not very much improved. There is one thing in regard to getting strawberries in the right condition after the first year you take off a crop. I have found that cultivation with the hoe, going over the beds and taking out every weed will keep the ground clear up to the time of covering and is very essential for next season's crop where two crops are grown.

Mr. Preston McCully: I would like to inquire whether any one here has had any experience in the use of a commercial fertilizer on strawberries?

The President: That is something the rest of us would like to hear from.

Mr. Kellogg: I have used it in a small way, but I have found that stable manure is better than a commercial fertilizer.

The President: I think a little nitrate of soda applied in the spring has a wonderful effect on them, especially if they are weak About one hundred pounds to the acre, applied in the spring, is a very excellent thing.

Mr. Peter Larson: How deep can we cover with straw without danger of smothering?

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The President: I will start the answer by saying twelve inches.

Mr. Elliot: Yes, provided the ground is frozen.

Mr. Larson: In 1905 I covered quite deep, and the berries did not kill out. Last year, I covered still deeper and some killed out, and I thought I covered too deep.

The President: Were they injured in 1906?

Mr. Larson: They were not injured at all.

Mr. Elliot: Was the ground frozen or unfrozen?

Mr. Larson: It was frozen when I covered a part of the patch, it was a little frozen when I covered the first.

Mr. Elliot: Could you see any difference?

Mr. Larson: No, sir, I saw no difference.

Some Valuable Biennial Plants.

MRS. D. W. C. RUFF, WHITE BEAR.

A well-known florist has said, "It is not necessary for a man to be continually at gardening to be able to write about it. In fact if he is too well posted on a specialty, his brain is apt to be clouded." As I am only an amateur and not "too well posted" on biennials, after this remark I will with more courage tell my experience with a few of these lovely plants. You have all heard of the peony craze, and the crysanthemum shows, etc.,—next year you will see a foxglove craze and a canterbury bell craze, for now we hear so much of these plants. All those who have lately taken up the making of a garden (for you know that gardening has become a fad, a fad well worth while), the new gardeners and those who have long loved their plants, are asking for and interesting themselves in *hardy* plants and biennials, especially foxgloves and canterbury bells, for one cannot well do without *one* if they have the other. Biennals have been disappointing to many people, as they have been mistaken for perennials, not knowing their natural term of life. "A biennial is a plant which requires two seasons of growth to produce its flowers and fruit, growing one year and flowering, fruiting and dying the next."

The raising of plants each season may seem a great undertaking to those who have never tried doing so. If no biennials have been grown this year, next spring plants can be obtained for next June's blossoms. Then in the latter part of May you should start a seed bed and raise the plants, which are attractive when growing—but they can be grown in the vegetable garden away from the flowering plants, transplanting in September to their permanent quarters.

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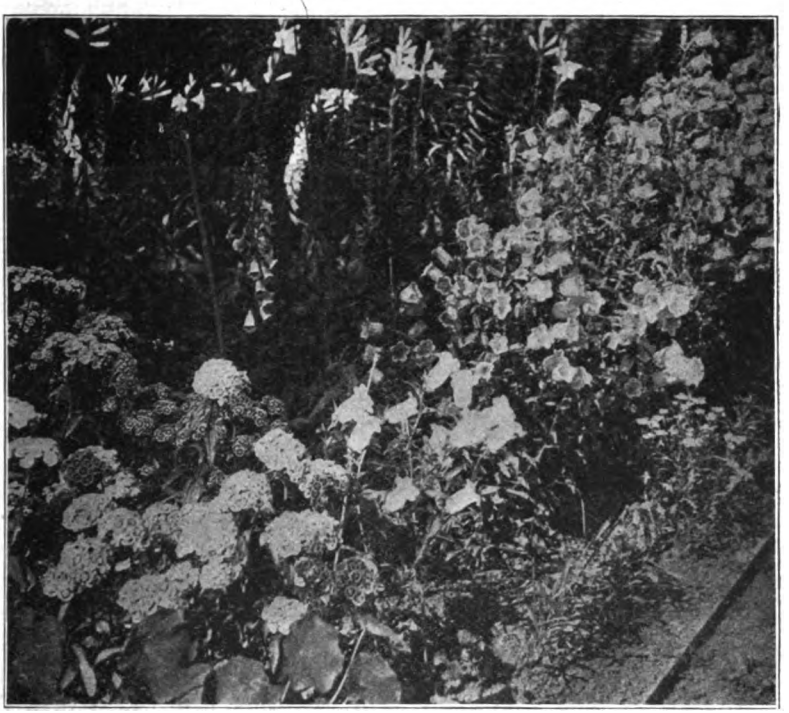
Digitalis, or foxgloves, are invaluable for the hardy garden. In the gardens of long ago they were called "fairy fingers." The name foxglove seems a little strange, but we find that fox came from the word "folk," little folk or fairies, and so to fairy fingers or gloves, the word digitalis, fingers, referring to the shape of the flower.

The plants send up strong flower stalks from four to six feet high, growing to the latter height in my garden last year. These flower stalks are thickly strung with scores of thimble shaped flowers which



A perennial border at Mrs. Ruff's.

resemble spires or towers of bells. They are as beautiful as gloxinias, the stems springing from masses of thick leaves, which look a little like mullein. The foxgloves flower in June and July but may be kept in fine condition by cutting the fading flower stems or main stem, which will cause the side branches to send up dwarf stems, blooming later. They come in shades of lavender, pink, pure white—and yellow, which I have not seen—but the gloxinae flora, with flowers spotted in the throat, are the most beautiful of all. Some are white spotted with brown, delicate lavender spotted, the least attractive being

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the variety called Monstrosa, which, in my opinion, looks too much like a freak with its monstrous saucer-shaped terminal flower. I longed to try this variety, with expectations of something beautiful, but was disappointed. If you have never seen foxgloves growing in a mass it is not possible for you to judge of their beauty by seeing a plant or two, but twenty-five or fifty growing in a bed or shrubbery make a display of beauty unsurpassed.

The ideal way to plant them is well towards the back of a border or in a bed with canterbury bells massed about them and the old-fashioned sweet william in front. These plants all bloom at the same time, and as the foxgloves are the tallest the different heights of the three named plants add to the beauty of one another.

A hedge row of Canterbury Bells at Mrs. Ruff's.

The blossoms of canterbury bells are more bell-shaped than the foxgloves, the plants being more pyramidal in shape and growing from two to three feet high. All the different kinds of campanula are beautiful; they are mostly biennial and perennial.

Canterbury bells come from the species "medium," which are the choicest of plants, some with charming blue flowers, others pink, white, lovely violet, singles and doubles.

The variety called calycanthema, "cup and saucer," a name which fully describes them, is a bell with the calyx broadened into another saucer-shaped flower, often divided into points.

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The doubles are fine to add to a collection, but are rather clumsy, one bell within the other, sometimes called "hose in hose." In color, the pink are the loveliest, but some of the visitors who saw my plants admired the blue ones, liking them best.

In mixed packets of seed there will be more of the blue, so it would be well to buy an extra packet of pink.

The flowering season can be extended by cutting the fading blossoms, throwing the strength into the side branches, which will carry blossoms well into September.

The perennial varieties of campanula I have not found as hardy as I would have liked, so I am fortunate in having the biennials.

Another biennial plant is the *dianthus,* Chinese pinks. Although a biennial, it blooms the first year from seed, but they are finer the second year; then they die. They flower all summer long, and they are low growing and fine for border plants.

The double Japanese belong to the same class, which come in many shades and brilliant colors, the dark velvety crimson being the best.

The *dianthus barbatus,* or sweet william, is justly a favored flower. Treat sweet william as a biennial plant, but it is supposed to be a hardy plant for three years. After the first time of blooming its best glory is gone. It grows one and one-half feet high, blooms in June, then again later if cut back. This splendid, old-fashioned plant produces large heads of colored flowers in both singles and doubles, in shades of red, pink, white, purple and violet.

Hollyhocks are hardy, but it seems to me a better plan to call them biennials, sowing seeds every year, as the flowers on young plants are much finer than on the old. In many seed catalogs hollyhocks are classed as hardy biennials. Few hardy plants possess as many good qualities as the hollyhock. Used as a background or in groups or about an arbor, they are beautiful. The flowers form perfect rosettes in so many delicate colors and shades of white, yellow, pink, salmon and bright red. The singles are the most decorative, for they give the old-fashioned touch to the garden and lend themselves to most any scheme of the gardener.

Do not crowd the plants, but give them two or three feet of room; then they do not rust.

All biennials may be grown from seed planted about the 22d of May, which I consider better than later planting in August, which planting is not as satisfactory, for the plants must be grown

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to a good size. If started in August you will have the trouble of wintering them in a cold frame. Do not plant earlier than May, for the plants must not have a tendency to bloom before cold weather comes—only large enough to winter well. This fall mine were over one foot across. Transplant so the seedlings will stand about one foot apart.

The covering of these biennials is important. Place manure between and around the plants, but not over them, as thick-leaved plants, like foxgloves, will rot under a heavy covering, such as manure or matted leaves. Place over the plants branches of trees and then a light covering of leaves or straw worked among the branches. Do not be in a hurry to uncover them in the spring. As long as the ground remains frozen keep them covered.

Some Shrubs and Trees.

W. H. GUILFORD, DUBUQUE, IA.

(Delegate N. E. Iowa Horticultural Society.)

Many, if not all, of the trees and shrubs mentioned in this paper are, or have been, on trial in your many experiment stations and nurseries. Perhaps you will find them in your parks teaching their lessons of beauty and utility to all who care to admire and learn, yet unknown to too many of the vast multitude in your wonderful city.

The science of plant and tree life has no mysterious secrets which are carefully or churlishly concealed; freely and generously bubbles unceasingly the fountain for all who approach with the noble thirst of knowledge.

The economic value of trees as a protection for the home, a shelter for man and beast, is hard to overestimate. Your own white pines and spruces, flanked with American arbor vitae, lift the fury of the storm from the earth and pass it away above, while man and his dependent creatures are in comparative comfort beneath.

Our mountains have given us some of the world's most beautiful hardy evergreens. As they do not come true from seed—and seem difficult to collect—they are necessarily high priced, but the blending of the glossy silver and the enduring deep green of the Colorado spruces will not go out of fashion, and, like an honorable and useful life, age but develops additional beauties.

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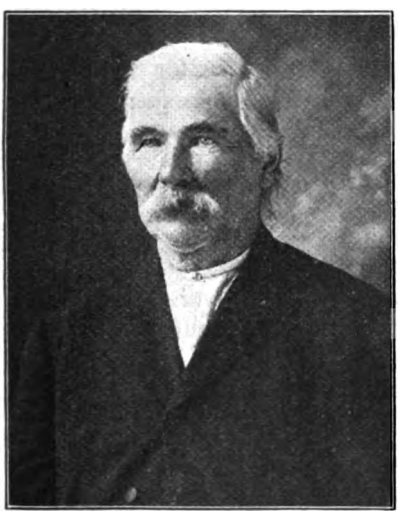
Populus bolleana should be known as the silver-leafed poplar—a tower of green and silver reaching away above all other trees, it commands attention. We have twenty year old specimens seventy feet high and not more than seven or eight feet spread of branches. As a landmark on prairie farms, it has no equal. The fiercest gales seem to but test its sinewy strength.

Schwedler's scarlet maple is a coming tree. It has bright scarlet foliage until midsummer, then changing to coppery bronze. With us it endures as much cold as our hard maple. This sport of the Norway maple will probably stand your winters.

Eleagnus angustifolia is propagated by your nurserymen and is, of course, hardy. This is a rather small silver-leafed olive tree, deliciously fragrant when in bloom.



W. H. Guilford.

E. mycrophylla is equally as hardy, but more of an ornamental bush. It sprouts so badly that it must be grafted on the other olive.

We all admire the birches, particularly the cut-leaf weeping. The pyramidal is hardy and a contrast to cut-leaf. The purple leaf is also hardy, not as strong a grower as the other.

The purple-leaf and Mumberg's barberry are being extensively used in private and public grounds for clumps and low hedging. Among spireas Van Houtii stands well at the head of the long list. It is very useful in screening off objectionable views. The little Anthony Waterer spirea is a constant bloomer, dark red, fading white. The red and white snowberries are used along the railroads in their little parks.

Of the larger shrubs, Viburnum lantana is very desirable. Its foliage effect is good—broad racemes of flowers, followed by white fruits, changing to red, then black; large, flat seeded, like black haw.

Viburnum opulus, European wild Guelder rose, is sometimes confused with our native high bush cranberry, whose fruit has a pleasant, sprightly taste. The opulus is the most nauseating thing imaginable, but they hang on the bush well into the winter.

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We are all partial to the lilacs. We have a new candidate for favor in the Chinese, or red Persian, cataloged as Rhotomagneises. It has been claimed by some that it is identical with the old Persian. There is a strong probability that they have never seen it.

Caragana abrocens sunburns with us; the moist atmosphere of northern Minnesota will suit it better.

Some unhappy creatures find fault with our grand flowering hydrangea—just getting too common perhaps.

The crowning floral extravaganza of the garden is a good collection of our perennial phlox—so cheap, so easy of cultivation, and such an abundance of bloom and such varieties of color, from June until November.

While the Northwestern plant breeders have been busy with the apple, our Rosearians have been intermingling the blood of the Rugosas with our perpetual bloomers until they have a class of all summer roses hardy enough for northern Iowa and perhaps for you. They endure our winters without protection. We have had experience with the following:

Agnes E. Carman: Deep scarlet red, fairly double.

Conrad F. Meyers: Large double flowers, clear silvery pink.

Madam Georges Bruant: Double, pure white.

C. F. Worth: Rosy carmine, good shape and substance; not as continuous a bloomer as the others; very strong grower.

Tom Lipton: Well named—it is persistent; clear white bloom, continuous; roses in clusters so compact that some rot; very dark green, clean foliage; strong grower.

New Century: Outer petals pale pink, with deep carmine center; blooms continuously; foliage not quite so good as Lipton.

Ames is a vigorous grower, running up seven or eight feet; in midsummer it is covered with a profuse wealth of large, dark red, full double, fragrant roses. This is perfectly hardy to the north limit of apple growing, and perhaps beyond. We have a hundred-foot hedge of this rose that is now fifteen years old.

All my roses containing Rugosa blood are exempt from the ravages of the rose slug.

Crimson Rambler is a good rose that pays for its protection, yet we cannot discard the old Prairie Queen.

Dorothy Perkins is the hardiest of all our climbing roses, though of another class. It blooms in clusters like the Rambler.

Mr. George J. Kellogg: Give us the best spirea.

Mr. Guilford: The Van Houtii.

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The President: What is next best?

Mr. Guilford: Now, you have got me going on that. There are so many of them; there are about fifty of them, and they all have their friends.

Mr. George J. Kellogg: Give us the names of the two best climbing roses.

Mr. Guilford: Crimson Rambler and Prairie Queen.

Judge L. R. Moyer: I was glad to hear the remarks about the Populus bolleana, and for landscape gardening, or where the architect wants a tall tree, he cannot plant anything better than the Populus bolleana.

Mr. S. D. Richardson: What is the common name?

Judge L. R. Moyer: Bolle's poplar.

Mr. Guilford: In regard to this Populus bolleana, there is the same complaint about it that there is about some other trees; they say we cannot get it. I think the trouble is the same as with the acorn; they do not know how to take care of it. It needs a great deal of water. If you put them out in the fall and mulch them heavily, keep a stream of water on them and keep them shaded, your cuttings will grow, and they will grow fully as nice and well as the willow.

Judge Moyer: Doesn't it sprout somewhat?

Mr. Guilford: It sprouts a little from the roots, but I have cultivated them for twenty years, and it does not sprout at all with me. I have propagated them by making a piece root graft, a common root graft. They caught up with the cottonwood and outgrew the sprouts around them.

The President: The way to do is to take scions and graft on its own root. It will also grow from cuttings.

Mr. John Bisbee: I would like to ask the name of the olive that he mentions, the common name.

Mr. Guilford: It is the Eleagnus mycrophillus. That sprouts so badly we do not use it.

PACKING APPLES IN WASHINGTON.—The apples are sorted for size, just as oranges are; wiped, wrapped, and packed in boxes 10½ inches high, 11½ inches wide, and 19¾ inches long. All apples showing indication of scale or worm, or moth sting, or burns from too much strong spray, are thrown out. The apples are wrapped in pieces of cheap paper, especially cut 8 to 10 inches square, and for sale the same as box material.

Some packers prefer that the box, when open, shall show the stem end of the fruit, while others prefer the blossom end. It is, perhaps, best in either case to have both top and bottom show the same end of the apple. This may be accomplished by packing the first layer, say stem end down, and all the other layers stem end up.

Some growers do not wrap the apples, but prefer instead to line the boxes with one or two thicknesses of paper. The box should be packed so that the top layer will protrude above the edge of the box about one-half inch at the ends, and an inch above at the middle. This hump can be secured by selecting slightly smaller apples for the end rows; when the lid is nailed on the box, then both the top and bottom show a slight bulge, and without mashing the apples at the ends the contents of the box will hold firm, so that they will not rattle about and bruise.

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Question Hour on Raspberries.

CONDUCTED BY A. BRACKETT, EXCELSIOR.

Now I will speak a few minutes on the raspberry. A few years ago we had quite a number of old varieties of raspberries that did well. But they seem to have run out, such varieties as the Loudon, Turner, Marlboro, Cuthbert and others; they are not being planted any more around Excelsior; they are back numbers now. If you want to find out the best variety of fruit to plant it is a good plan to take the experience of your neighbors, but do not take the experience of one man alone, he may be prejudiced. We have one hundred and forty members belonging to the Fruit Growers' Association of Excelsior, that make their living out of fruit almost exclusively. You take their experience, and you find they are discarding all old varieties of raspberries and coming down to the King, Minnetonka, Ironclad and Miller, especially the King. It is a smooth growing plant. I never saw any disease on it, and it is one of the finest market berries that we have. It will fall off when it gets fully ripe, and for that reason we do not get over-ripe and soft berries in the boxes. That is a commercial advantage. When a rain comes, and the berries cannot be picked, the first time the pickers come into the raspberry patch they take everything that is ripe, and in that way they get a great many over-ripe berries of the old varieties, which they put in the boxes, and by the time you get them on the market the juice is running out. But when the King becomes over-ripe it falls to the ground, and we are never troubled in that way when shipping. We used to plant raspberries in rows one way and cultivate back and forth, and the result was in a few years we had to renew the bed. We now plant them four feet apart each way. We cultivate each way and keep the ground perfectly level and all the weeds out without hoeing. We take care of them about as we take care of corn. We never cover the King raspberriees. We can see no difference between those covered and those not covered.

Mr. Richardson: I want to tell you that the King killed down near the Iowa line.

Mr. Brackett: It will kill some years in some places. With me last year they made a rank growth. A new bed will sometimes make too rapid a growth, and they will become injured in the tips.

Mr. Harrison: Where did it originate?

Mr. Brackett: I do not know.

Prof. Walden: We had four acres at Fargo, and they did not kill; some of the other varieties were badly injured.

Mr. Richardson: With us the Iowa was the only one that did not kill.

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Mr. Anderson: You take the Minnetonka Ironclad, that will not kill, and it is a better quality of berry than the King. It is a good marketable berry, but it comes off very hard, and the pickers make a kick when they pick them.

Prof. Walden: How about the Haymaker?

Mr. Brackett: We are not growing them. What we want is a berry that will stand the winter perfectly, that picks well and makes a good marketable berry.

Mr. Richardson: How deep do you cover?

Mr. Brackett: Do not cover at all.

Mr. Richardson: When do you prune?

Mr. Brackett: In the spring.

Mr. Richardson: Do you prune the top part?

Mr. Brackett: Not unless they make too rank a growth. I do not trim at all unless they get out of reach.

Mr. Johnson: I will defend the Minnetonka Ironclad. In a good rich soil they will come out all right.

Mr. Brackett: The Minnetonka Ironclad will not make as good a growth as the King.

Mr. George J. Kellogg: How long will the King stand planted four by four?

Mr. Brackett: As long as you take care of it.

Mr. Pabody: Is it not just as well to get the old canes out in the fall?

Mr. Brackett: Well, yes, only they are some protection because they catch the snow, and that makes some difference.

Mr. Pabody: Would you plant raspberries in a young orchard?

Mr. Brackett: In some cases it is all right.

Mr. Harrison: Does the King multiply rapidly?

Mr. Brackett: It does. It is a great plant to make suckers. That is one advantage in keeping it in hills.

"Is there any one here who has grown apples near cedar trees and, if so, how did they succeed?"

The President: I have some Wealthy almost immediately adjoining some large cedar trees, and they have been as good trees as I have in my orchard. They have done admirably in every way.

Mr. Husser: How far apart are they?

The President: They almost touch.

Mr. W. H. Jones: I asked the question for the reason that I received a pamphlet from the agricultural department at Washington, and on the last page they say, "Do not grow apple trees near cedar trees because the fungus hibernates near cedar."

The President: I have had cedars all over the nursery and never noticed anything injurious.

Mr. Philips: This same question came up at the Iowa meeting, whether it had any influence on rust or blight, and it was decided it had not.

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Question Hour on Blackberries.

CONDUCTED BY A. BRACKETT, EXCELSIOR.

Now we come to the blackberry. The blackberry is not as desirable as either one of the other berries, but we must have it. If we want a succession of fruits on our tables and for our markets, we must put in blackberries to finish up with. Our strawberries commence to ripen about June 5 and continue about a month, the raspberries last until the blackberries come in, and blackberries last until frost. I will say right here that the blackberry has got to be protected and properly taken care of. You have got to have a wire to tie them up to, or they will spread out into the row so that they cannot be picked. There is no blackberry that will winter without being covered. The Ancient Briton blackberry is not as hardy as the Snyder, and it has this fault that it will set more berries than it can ripen. The Snyder blackberry is the best to plant for the farm.

Mr. Johnson: How do they stand growth in the timber? Do you think they would have to be protected if planted in the timber?

Mr. Brackett: It is possible you might winter them through in that way, but you must cover them up if grown in the field; you simply bend over the plant and put a little dirt on it, then you take a plow and throw your furrow over and follow after with a spade and cover the plants up.

Mr. Johnson: Does not the Snyder run so that the plow will cut the roots?

Mr. Brackett: You will cut a few roots, but it does not hurt them. You cannot grow blackberries on high land, you must have them on moist soil. If it turns dry your crop will be cut short.

Mr. Gjelstrum: How about the dewberry?

Mr. Brackett: We cannot grow them to any advantage.

Mr. Johnson: Do you cover the Ancient Briton too?

Mr. Brackett: They have to be thoroughly covered.

Mr. Johnson: Will they grow under irrigation?

Mr. Brackett: The nicest irrigating method I ever saw was with a tile laid under the row about two feet below the surface. The tile was laid under the row, and the lower end was closed up. By pouring water into the upper part of the tile it would fill the tile and would soak out at each joint and give perfect irrigation and insure a crop every year.

Mr. Mason: Could you not have success with the Ancient Briton by thinning out to three canes?

Mr. Brackett: There is no doubt that if thinned out they would be more apt to mature a crop.

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Crossing.

(A discussion following the reading of the report of the secretary of the Plant-Breeders' Auxiliary, Mr. Clarence Wedge.)

The Chairman: We would like to hear from Mr. Haralson, the superintendent of the trial farm at Excelsior, on this subject of crossing.

Mr. Chas. Haralson: I have not done much crossing out of doors; I have not used the bag at all. It is very slow work. I prefer to take my chances without bagging them. A man can work seven or eight flowers, or even more, while he is putting on one bag.

Mr. Clarence Wedge: Would you do that out-doors?

Mr. Haralson: I would do that out-doors too; I can take my chances on getting fruit because I can do so much more work. A person can have more fruit set and get greater results in that way.

Mr. A. Brackett: How would you work in regard to watching the bees?

Mr. Haralson: We have bees out there, but that does not seem to make much difference. As soon as the pistil is ready, take the first pollen there is—and that is the chief thing, that you do the work; in most cases anyway.

Mr. Wedge: If you emasculate the blossom and leave the flower until the next day, would that be the proper time?

Mr. Haralson: I do run over the flower with the pollen sometimes, sometimes I emasculate the bud and go over it the next day, and by so doing it is hardly possible that the insects will get ahead of you. The pollen is there waiting for the pistil to be ready for it.

Mr. Wedge: Mr. Haralson, your idea is that instead of putting the sack on so as to keep out the bees and insects, to prevent them from bringing in pollen you do not want, you remove the anthers from the male element of the flowers, and then immediately introduce from the other tree or plant the pollen with which you desire to cross it, even though the blossom is not ready for it? The pollen keeps its fertility right there all ready. Then you go over it again the next day, giving it two brushings over. I do not use a brush, but take the blossom and brush it over the stigma. I go into the orchard and bag my clusters of blossoms and bring them in. I take off one spur at a time and notice if the pollen is ready to be transferred.

Mr. Haralson: The best way is to get the pollen in a large amount, and have it in a cup or saucer, and then use a camel's hair brush to put it on, and in that way you can put it on a thousand blossoms in ten or fifteen minutes. It is very little trouble to put the pollen on in that way. If you have only a little bit of pollen you can put it on the flower with your finger, but in most cases it is best to use a camel's hair brush. Just go over the flowers very gently.

Mr. Wyman Elliot: Did I understand that you fertilize blossoms of the same cluster?

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Mr. Haralson: Yes, I do outside: there is no danger of getting too much fruit to set. At Brookings we had 200 on a little tree that high (about four feet). That is too much, however; it is more than a tree can take care of. About the emasculating part: In most cases I use a sharp knife, a pen knife, to cut off the petals, and then I cut all around very gently and pull it off; it is very quick work, especially when you get used to it.

Mr. L. W. Prosser: In the apple blossom I noticed quite a difference. Does it make any difference in pollenizing the first or the later blossoms as to the result?

Mr. Haralson: Take the first ones. I have noticed that of the last blossoms the apples usually drop off when the apples are very small. Generally the first blossoms are the strongest; you get the best results from the first blossoms.

Mr. C. G. Patten (Ia.): How is the scientific man to know what he is going to get?

Mr. President, if I should attempt to speak too long call me down; I do not know what I may say. I can commend what Mr. Wedge has said in reference to the use of the Patten Greening as the mother parent, from the fact that it has such hardiness, such vigor and such freedom from disease, from any sort of disease as compared with most other varieties. I myself, in a latitude as far north as this, would much prefer to use the Patten Greening rather than the Wealthy, especially in those trees where they are growing side by side in the ordinary way. From the fact that we have many chances of obtaining color in the apple, the Wealthy would contribute from its quality and the Patten Greening would contribute from its hardiness and other desirable factors.

As to the matter of saving pollen in this work, I can state briefly what my practice has been. In saving the pollen I do as Mr. Haralson stated he did, by securing a large amount of pollen so as to have plenty of it on hand. I watch the time when the blossom opens—and I have never indiscriminately selected the blossoms, but I select my pollen only from the strongest and most vigorous blossoms. I think that is one of the first steps in selection. Then in order to know that I am selecting right, I select from those blossoms on which two or three of the anthers have fully formed their pollen, on a blossom that has come nearly to perfection. It does not take long to ripen that pollen. Twenty-four to thirty-six hours ripens it perfectly, and then if the work is done carefully there will be no doubt of favorable results. I select my spurs with the stronger blossoms, cutting off the weaker ones, leaving two or three good strong blossoms and cut out all the anthers. Later on you have to be more careful to do that; you must be careful to go over them at the right time, before the pollen has ripened, and in that way we get better results. It is not very difficult to put on sacks after one gets used to the work, if the sack is large enough, six inches in width and some ten inches long, according to the variety you work on. You must not leave the paper sack over the blossom too long; if you do you will destroy the work you have done, and the apple will drop

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from the spur. Two or three days is long enough ,and perhaps one day, or twenty-four or thirty-six hours, would be abundantly long enough to leave the sacks on. Then you remove them and replace with mosquito netting sacks. By doing that we come as near to knowing what we are doing as we can.

Mr. Elliot: Is there any object in putting on paper sacks over the mosquito netting at first?

Mr. Patten: The object is to exclude all foreign pollen. The pollen would sift through that netting sack immediately if the conditions were favorable. For instance, I had applied pollen of a variety to be secured, and how do I know or how does any one else know, for right beside it in the orchard stands a tree with pollen that is two or three times more potent than the pollen I have applied, and in fifteen minutes or half an hour, or in two or three hours or, as Mr. Darwin proved, after nine hours, one pollen would overcome the other in the plant being pollenized? So it requires a great deal of care to know what we are doing. If I had followed the principles indicated, how would I know I had a cross between the Grimes' Golden and the Greening? We would have to guess at it, because we could not tell to a certainty what we were doing.

Prof. N. E. Hansen (S. D.): I simply want to say that this is work Mr. Haralson has been doing for a number of years, and we discarded paper sacks years ago as past history. We know very well what we are doing. The work is done wholly under glass, and therefore we know exactly what we are doing. The outdoor method we would find very disappointing under our conditions. I am talking about indoor conditions, and so is Mr. Haralson, but you are talking about outdoor conditions.

Mr. Patten: There would be quite a difference between hothouse conditions and outdoor conditions. In hothouse conditions we have this disadvantage, that it would not be so natural.

Prof. Hansen: Have you tried it?

Mr. Patten: Well, I would not suppose so.

Prof. Hansen: If you say it is so, I disagree with you because I was the first man who tried that. (Laughter.)

Mr. Patten: I would select the most vigorous tree for the male, and for the female parent the best all round tree I could find as to hardiness and every other perfection.

Mr. Elliot: Would you apply quality first, second or third in that process?

Mr. Patten: In both parents I would say I would do my work with the trees that had just as many perfections in them as I could possibly find for the purpose I wished to use them for.

Mr. A. J. Philips (Wis.): Name those perfections in the order in which they come.

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Mr. Patten: The first would be hardiness and the general vigor of the tree, a perfection of leaf against every unfavorable condition, climatic conditions, Then, of course, we must select for size and form and color of fruit, and quality might be included in that.

Mr. Elliot: On which side would you have color, male or female?

Mr. Patten: According to my experience on the male side, almost always.

Mr. O. F. Brand: It seems to me you have left out one of tne main things, that is productiveness.

Mr. Patten: Well, of course, that is included. I would not take for the parent tree in that work a tree that was not productive.

Col. G. B. Brackett (Washington): There are one or two points I had in mind to make that have perhaps not been touched upon at all, and one was with reference to the difficulty of putting on the sacks. Mr. Patten talked about tying them on, but it can be done very quickly by wiring them on. If you use wire you will find it much more convenient, and then again you can use that same wire for a label, if you use a label, and at the same time it wraps the paper sack and holds it where wanted.

There was one other matter mentioned here by a gentleman from Minnesota. He talks about using a cup or saucer or paper to hold his pollen in. I would like to know how he is going to use that in climbing a tree twenty to thirty feet high. I find the best thing to use is a test tube which you can slide into your buttonhole and have a camel's hair brush in the tube. With that arrangement you can climb all over the tree, and when you want to use it you simply withdraw the brush and brush it over the pistil. Some years ago when the Sudduth pear was first brought to the public attention I thought I would get some seeds. I wrote to Mr. Augustine, and he said they had never found any seed. I made up my mind I would have some by crossing the Sudduth pear. I concluded it was good stock, and it would be good stock to work on, and that we could improve the quality of the pear, and I arranged with Mr. Augustine to notify me when the trees were ready for crossing. He failed to notify me, however, and I started immediately and went over there. I found the trees were nearly all in bloom at that time. In addition to the original trees there were other trees planted there that were twenty to thirty years old. When I looked at the trees I found they were so far advanced that I could find but few blossoms that had not opened, but I succeeded in putting on something over one hundred sacks in one day, and the next day I pollenized them. The result was that in gathering the fruit in the fall I found there were six to eight seeds in every pear that had been crossed, and those seeds I planted the next spring. In some of the best the male plant was the most potent. I found in planting those seeds they made a most rapid growth, and the next year they made some two or three feet. The male parentage showed more marked than the female. I could pick out each row of trees—the parentage showed plainly. I used the Seckel, Anjou and Flemish Beauty to make that crossing. I could pick out the varieties crossed on the Anjou, the foliage showing a very

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marked difference. The result of that experiment was that we got a great many of those different varieties of pears, but the experiment was never carried out so I could get any definite results. I had the scions of the Imperial last fall, and I took the seedlings and cut them off near the ground and used them for scions in top-grafting and got good results. I put them on the Kiefer pear and worked them on the top. The result was that I was called away to Washington, and the tops of the Kiefer outgrew nearly all of them. When I went back last fall I found they had overgrown, but I saved a few of those scions. I am not able to report what the result would be.

Seedlings.

L. W. PROSSER, LE ROY.

(Southern Minnesota Horticultural Society.)

Whence comes this ever increasing demand for seedlings and new varieties of fruits and plants? We have searched this continent from east to west but are not satisfied.

Prof. Budd crossed the Atlantic and after exploring western Europe turned his attention northward to Russia, hoping to find hardy trees that would stand our climate. Bringing these trees south, as is usually the case, changes their season so that their winter apple becomes our fall apple. None of these fully meet the requirements of our conditions. Prof. Hansen, in his search around the world, finds no encouragement along this line.

The attention of all is now directed toward the seedling. The work of Mr. Perkins in growing seedlings has awakened more general interest than any other effort of his life. From one planting of seeds of the Malinda apple he has produced over three hundred different varieties of apples. The Malinda apples from which these seeds were taken were grown on a tree that was surrounded by other trees on which the apples were red or dark colored, and with the exception of six all the three hundred varieties are red or dark colored. A number of these apples are of commercial value. At least two are entitled to rank among our better seedlings.

Mr. Patten's collection of seedlings shown at the late winter meeting of the horticultural society was the product of hand-pollination on a grand scale. Most careful work was done; nothing was left to chance. Probably a better collection of such apples was never exhibited.

Prof. Hansen is doing a great work for the northwest. He combines scientific knowledge with genius, and an ability for a vast amount of hard work. He has given us a strawberry, a cross between the tame

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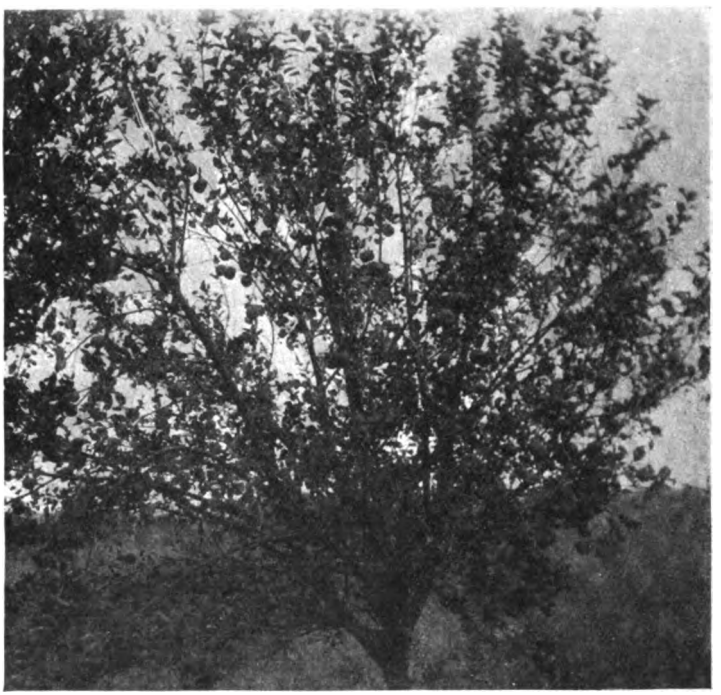
and wild, that stands our winters uncovered without injury. He has cross-fertilized the plum with the Chinese apricot, producing a tree that is hardy and productive. Fruit is of good quality; size 1¼ to 1½ inches in diameter.

In the production of seedlings, both parents should have size and quality. In one cross Prof. Hansen uses a small shrub for the mother plant and produces a shrub at three years about three feet high. In the other case he uses a large plum for the mother and the same father plant for fertilizing and produces a tree that is twelve feet high in the same time.



L. W. Prosser's seedling apple tree, named after himself. Probably a seedling of the Wealthy.

Prof. Hansen's work is just begun. He will yet give us alfalfa that will stand our winters, and in years to come we shall eat peaches from his hand.

If I wished to produce a good shorthorn, I would mate two shorthorns that were well bred, each good individuals, with some certainty of producing a good animal. The same law applies, in part, to fruits. We can select good individuals, but their breeding we do not know.

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The crosses that have entered into them for generations back we cannot tell. Nature has left this work to the wind and the bee.

A few years ago the Illinois Experiment Station made an experiment to determine what changes could be made in corn by continued selecting. In 1896, two different sets of ears from a single lot of corn were selected. One set was selected for high protein content; another set for low protein content. These two sets were planted in different fields, and seed was selected from each to be planted again the following year, and to be repeated year after year.

In 1896 this corn contained 10.92 per cent of protein. In 1905 the protein content of the high protein plot was 14.71 per cent; while that of the low protein plot was 8.57 per cent, showing a difference of 6.14 per cent protein between these two strains which were originally from the same lot of seed.

Our own experiment station is doing a great work along these lines, giving us better grains and increasing the yield thousands of bushels.

Prof. Green has brought out the Beta grape, which gives great promise for the future.

Wyman Elliot in the Carrie gooseberry has almost eliminated the thorns and produced a berry that is free from mildew.

Shall we do our part? This work should not be left to our experiment stations alone.

Our Minnesota Horticultural Society has about 2,700 members. If each one does a little to improve our fruits, we shall surely make some advancement.

Our best results will probably come from hand-pollination, for by this method only can we know what we are doing. In cross-fertilization select the most vigorous and most perfect trees for both parents. Look first for hardiness, vigor of tree and perfection of leaf; next for size, quality and color of fruit. Color comes from the male parent almost always. The male parent is shown in a marked degree in the seedling.

Some trees are more prepotent than others. The Wealthy is remarkable in this respect. It has produced the Peter, almost identical with itself. The Evelyn and Perfect have many points in common with it. The Prosser, supposed to be a seedling of it, resembles it in size and color of fruit. The tree is a faster grower.

In cross-fertilization select the finest and most vigorous blossoms, taking the early ones. Many of the later ones drop off. Select from

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those in which one or more anthers have burst, after which the pollen will be sufficiently ripened in twenty-four or thirty-six hours. Cover the blossoms to be fertilized with paper sacks for twenty-four or thirty-six hours to prevent other pollen from reaching them, using sacks six inches wide and eight inches long. Leaving sacks on too long affects the vitality so that the blossoms drop off.

In twenty-four or thirty-six hours brush the pollen over the blossoms and place over them a sack of mosquito netting. Mark these cross-fertilized blossoms so that you will know them. Use zinc labels. They are everlasting and easily made. To make them use one dram verdigris, one dram muriate of ammonia, one-half dram lampblack, two ounces water. Mix well, adding water slowly. Write on zinc with a quill or heavy pen.

Plant the seeds of these cross-fertilized apples and in one year top-work on bearing trees. In two or three years from that time we should see the fruit of our labor. Whether a blessing to the northwest or a disappointment to ourselves, time alone can tell.

Hardy Stocks for Minnesota Trees.

GEO. W. STRAND, TAYLORS FALLS.

A bane to the nursery business generally has been the indiscriminate use of stocks for fruit trees and the dissemination of such over the northwest irrespective of whether they would prove satisfactory in their ultimate location or not. "Cheap stock" grown in the south and east, coming into competition with that of the northwestern nursery, has forced down prices and quality to such an extent that they have of necessity cheapened their methods and in some instances almost lost sight of the "ideal." It is only when a hard winter strikes the nursery that we awaken to the crying needs of our patrons and recognize fully the value of selecting the hardiest possible stocks for our fruit trees.

The last South Dakota legislature enacted a law (which went into effect July 1st) which if enforced will materially raise the standard of stock planted in that state. No doubt it is well that such precautions are taken to protect the public, otherwise the home nurseryman could not cater to their needs with any degree of assurance that his efforts at producing stock adapted to the severer conditions would be amply compensated.

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Throughout the greater part of Minnesota, Wisconsin and Iowa the question of hardy stocks for our fruit trees has been satisfactorily settled in most minds, for the apple, the hybrid crabs, such as Whitney, Sweet Russet, Orange, Brier Sweet, etc., give us seedlings which have proven beyond a doubt to be hardy and congenial. Plums should either be on their own roots or grafted on seedlings of our native sorts.

There is often a marked influence of the stock on the scion and vice versa. Hence it is important that we use stocks having an affinity for each other as well as adapted to the section of country they are intended to be sold in. The particular influence of the stock or scion, as the case may be, can only be learned by experiment, and I believe that it will be satisfactorily settled for our northern and western prairie sections in the use of Pyrus baccata seedlings as apple stocks.

This is not exactly ideal and will demand a change in our methods of propagating, but experience has demonstrated that it is the only hardy stock adapted throughout that section. Being an early and productive variety, and having numerous seeds, the nurseryman who desires to grow a limited amount of stock thus can soon have a stock of home grown seed. The fruit is too small to be commercially valuable, and hence there would be more of them used for stocks if once planted. Shall we cater to these needs or not is the question? After that is decided, the rest soon follows, for we, as nurserymen, are not merely growing trees "to sell," as is the case with so many of the manufactured articles placed on the market today. We are under bond to supply stock adapted to the section we are selling in.

Prof. Hansen, of South Dakota, has done much to aid in bringing about this change, and if we as nurserymen will take an equal interest in local needs this section will soon cease to be a "dumping ground," but rather one noted for the quality of its productions. Much has been said regarding the use of Pyrus baccata, but if we are to grow stock adapted to the severer sections of the northwest we must use it. Russian experience, as well as that of many of our most prominent experimenters, seems conclusive evidence that we cannot use it in piece-root grafting, the same as other stocks. It is desirable to have the entire root of that stock, for even the scion roots of some of our hardiest varieties will be damaged or killed, while these will stand. On the other hand the Pyrus baccata stock does not start as readily as our commercial stocks, and hence trees grown thus from piece-root grafting are very liable to be top-heavy after the second season.

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Budding or out-door grafting is at best a rather expensive method and will make the trees worth about twice the price of those ordinarily grown, or about equal in price to plums or cherries. This, on the open market, would put them "out of the race" to the average purchaser, at least until he became educated as to their relative value.

We have never tried the whole-root graft on this stock, but I believe that it would solve the problem more economically. In our experience with budding and crown grafting on the Pyrus baccata the trees are well proportioned until after the third season, when they begin to show a lack of roots in proportion to the top. I hardly think that this would be enough so the tree would be top-heavy if properly trimmed and planted. They would be dwarfed somewhat and come into bearing earlier on account of this lack of affinity. I understand that in Russia they attain about three-fourths the normal height and are productive as well as long-lived for that section—twenty years being regarded as a maximum age.

The experimental plantings of such trees made in our various trial stations will soon furnish us with ample proof as to their general value, and as fast as the seed is available our progressive nurserymen will have offerings on the market.

Cross-pollenization of the Pyrus baccata should be avoided for best results or hardiest seedlings, otherwise they would vary much in quality, as is the case with our commercial stocks now.

The President: This is a very important subject, and the paper is now before you for discussion.

Mr. Geo. J. Kellogg (Wisconsin): I would like to hear from Mr. Underwood as to the matter of cost. Mr. Strand says it doubles the cost to use Pyrus baccata stock than to use Pyrus malus stock.

The President: Who can tell us about that?

Mr. Clarence Wedge: I am very much interested in this paper of Mr. Strand's. It is a matter of importance to the section he represents, and I do not know but to the larger part of Minnesota. I think he has rather over-estimated the extra cost of growing the apple on the Pyrus baccata. There is a great advantage in that to the nurseryman, for if grown on that stock we are absolutely immune from root-killing in the nursery, protection against which costs us a good deal of time and trouble, and in spite of our precautions we lose a good share of our trees. It has been so at our place with orchard stock. We have been experimenting somewhat with Pyrus baccata stock, both as a root graft and as a budded tree. Budded, as I understand the proposition, even our slow growing varie-

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ties, like the Tetofsky, will make a tree fit for market in two or at most in three years. We gain a little time in budding if it does cost a little more, and they make nicer looking trees than those root grafted in the common way. I spent some little time in our nursery not long ago in looking over our experiments in root-grafting. We have them side by side on the best northern Vermont stocks and the Pyrus baccata. I could discover no difference in growth in the two rows. In one case—I think it was the Hibernal—I do not think they had made as good a stand, but not having been kept in quite as good a condition may have made the difference. I remember the Patten Greening made as good a growth on this stock as on the Vermont stock, and I do not see why we cannot grow trees in the nursery on this stock, but what they will do afterwards we cannot determine except by experience. But this matter of hardy stock is one of first-class importance, and I, for one, should be pleased to hear the experience of any one here who may have had to do with the matter.

Prof. N. E. Hansen (S. D.): The Pyrus baccata is found in Russia, but the Pyrus malus is found in Norway and Sweden. It is not the same thing.

The only point I wish to add to this discussion is that just now in the apple growing question we are about in the position of the pure food people of the canned goods class. You can put canned goods on the market by the use of preservatives at such a price that no honest man can compete; he cannot compete with straight goods. That is the way with apple propagation. You can get trees propagated in the south immensely cheaper than trees grown on hardy stock. So an honest man cannot raise hardy trees unless you educate the people to know what they are getting. The average farmer wants a tree that is cheap, and as long as a better tree costs more I do not know how to remedy this matter. It will not cost twice as much to get an apple tree on a stock that will live as on one that will die. We have been too anxious to sell apple trees too cheap. In Germany an apple tree costs more than it does here, comparing the price of labor; it would make apple trees in this country cost about $1.50 apiece. We have been anxious to get apple trees too cheap that are adapted to growth in the north. The point I wish to make is that up at Moscow last year I found time to visit a nursery that was conducted by a successful German, educated in Germany and used to German methods. I had visited him some years before. He said, "I guess we will have to come to it." I asked, "What is that?" He said, "We will have to use the Pyrus baccata. I do not like to come to it, I can get seed cheaper from France and Germany, but all root-kill except those that are on other and hardier stock." The only way that will give us hardy stock is to take plants that are adapted, that have been brought up by nature here when at times the thermometer was forty degrees below zero and the ground bare of snow. The ordinary apple

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seedling is raised from seed picked up in the cider mills of Vermont. The cores have been sent from our cider mills to Germany, France and England, and the seedling has not been found changed.

Mr. C. S. Harrison (Neb.): Is there any show of getting baccata seed?

Prof. Hansen: Get trees planted out. At first there was a cry for hardy stock, now we do not hear so much complaint. We get all the wild plum pits we need. Simply plant trees enough to get our own seed.

Mr. Harrison: Will it root-kill?

Prof. Hansen: It will stand with the ground bare and dry.

The President: I want Mr. Patten to say a few words on this subject.

Mr. C. G. Patten (Iowa): I have no question but what this audience wishes to get all the facts in this case. Now I have talked on this subject several times before, and I do not wish to appear dogmatic, but I do wish to say that my experience in using the Pyrus baccata is the same as that of Mr. Wedge, that he cannot see the difference in two or three years, whether upon the Pyrus baccata or common apple stock, but after that the change takes place. There is such an inharmony existing between the root-graft of the Pyrus baccata and the common apple. They will become dwarfed in the root so that you will scarcely have any root at all, and when five or six years old they will dwarf in the top. I made extensive experiments with that stock more than twenty years ago, and I stand here in opposition to Prof. Hansen on this question. I simply wish to warn the horticulturists of this country that they cannot depend upon the Pyrus baccata stock as a root-graft. I have found it just as stated to you. I wish to stand a little in defense of the men who are using such stock as we have. The nurserymen throughout the country that are using stocks are as anxious to use good stock as any professor experimenting at a station, and I don't care where he comes from. They must use such stocks as they have. The great trouble is that we are not willing to learn; we are willing to concede what others have learned or think they have learned, but just here we should take a step in advance. Instead of planting this miserable little Pyrus baccata we should take the hybrids of it, like the Minnesota, the Orange, the Transcendent, Brier Sweet or Whitney No. 20, and especially in this latitude where Prof. Hansen has to contend with the arid plains, which is something we do not have to contend with in Minnesota and Iowa where forests grow. We must look these things squarely in the face.

Prof. N. E. Hansen (S. D.): Mr. Patten and I have discussed this subject before, and I am always careful—and I am now—to concede the points made by Mr. Patten. It does not mean that we must get the smallest Pyrus baccata. As we go further northwest we have got to get closer to the pure Pyrus baccata, and as we go further south the seedlings will be better. I have always warned against piece-root grafting.

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The President: Before closing the discussion, I am going to call on Col. Brackett to say a word on this subject.

Col. G. B. Brackett (Washington): I have nothing to say on that subject, but I believe we have the stock of the Pyrus Ioensis. A number of years ago when I was looking for native stock I found trees growing in Hamilton county, Iowa, where the tree was as large as the Pyrus malus anywhere. It was on the Mississippi river at Burlington, and was propagated by a nurseryman named Lugenbiel. It was of large sized growth when he commenced to propagate it in the nursery, and this tree was in an orchard where all the trees had been killed out. This stood there alone perfect in every way, foliage and shape. I believe that is a stock that will do in any climate, and it is not necessary to go abroad for stock.

Question Hour.

Question: "We have received several orders for the Minnetonka apple. How can we fill them?"

"We have received several orders for the Minnetonka apple; how can we fill them?"

Mr. Kellogg: If you see a Minnetonka nurseryman here call him out.

The President: We want suggestions from the Wisconsin nurserymen how to do it.

Mr. Kellogg: Well, I should say if you want a Minnetonka apple you will have to wait until it is grown. As I understand it, there is no Minnetonka apple. The trees are six feet high, and he guarantees they will bear so many apples a year, and the place of business of that man is not very far away. I have learned that the tree that is sold as the Minnetonka produces three or four different kinds of apples.

Mr. E. A. Smith: I want to tell you how near I came to seeing a genuine Minnetonka apple. Two years ago I visited the home of that apple, and I was shown several thousand trees said to be the genuine Minnetonka. I asked to see some of the fruit, and while the tree was not fruiting that year the man who was driving me around the ground said there was one tree that had an apple on, and he would show it to me. When we got there the apple was not there, the wind had blown it off. The trees I was shown were about three inches in diameter. That is as near as I ever came to seeing a Minnetonka apple.

Mr. Philips: I do not think that apple has been handled right by this society and by the State Agricultural society. I have a great many inquiries for it. It is being sold in our country to a considerable extent. A year ago last spring a lady called up my house on the telephone and wanted to inquire of me about some fruit trees. My wife told her I was not at home. However a few days later I went up to see her, and she said, "I wanted to see you about ordering some trees, but an agent came along and I ordered some." I asked her where they came from,

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and she said from Minnesota, she didn't know the name of the place. About two weeks afterward I was going by her house, and she called me in and said she wanted me to see her trees. She said, "You have told me so much about Minnesota people and what they were doing, and I got my information from a St. Paul paper which said they were selling some wonderful trees at one dollar apiece. I know they thought I was a fool, but I thought a tree that cost a dollar would be a big tree, so I ordered two trees and told them to send them by freight. I thought the price was big enough to warrant them sending them by freight, but when they came they came in a letter by mail." (Laughter.) She told me to come out and see them. I went out and saw them, and the one was about six inches high and the other about eight. She said, "I told them I am not as big a fool as they think I am." One died the first summer, and the other will next summer, but it is a little Wealthy, I think. There have been several Minnetonka trees sold in my town, and they have all the appearances of being Wealthy, and from the description of men growing the apples they are either Wealthy or Longfield. Here is the point I am getting at: I tell them in our state that I have been attending the Minnesota state fair for the last twenty years, and the state horticultural society for the same length of time, where they raise some of the best apples in the world, and I have never seen a Minnetonka apple at either place. If the Minnetonka apple is not a child of the imagination, why in the name of God don't you make them show up the apple so outsiders can see them? (Applause.)

Question: "What, if anything, do you know about the Windsor Chief, of Wisconsin?"

Mr. Philips: Mr. Plumb introduced it, and in certain localities they are reported doing well. It is claimed it is a good winter apple. I saw it on exhibition in the middle of March on the state line south of where Mr. Kellogg lives. I went down last summer and got some scions, and I was very favorably impressed with it. I told the man it was a good winter apple, and he said it was only a fall apple. The trouble with the Windsor is that it blights badly and is not a heavy bearer. Mr. Kellogg knows the Windsor; he lives down there and knows it well; let him answer.

Mr. Kellogg: The Windsor Chief is an apple that is quite well thought of in the southern part of Wisconsin. It originated in Dane county and was brought out by J. C. Plumb. It will be shown at our state meeting and is a very nice specimen. While the apple is not of a very high quality, except for the blighting of the tree I find no objection to it. I think with age it will be productive.

Mr. Philips: In an orchard with five winter varieties, would you plant it?

Mr. Kellogg: Yes, I would plant it.

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The President: At our place it blights very little, gives promise of bearing and is what we call a winter apple.

Mr. C. G. Patten (Ia.): In central Iowa, east of Des Moines, the Windsor is doing very well, and it colors up more with us than it does in Wisconsin. Mr. Harrington, a large orchardist, is growing it with success.

The President: It hangs to the tree until it is colored

Question: What is the best early apple for the farmers of Minnesota to plant?

Mr. Schutz: I find that the Tetofsky is a very good apple, but it is necessary to harvest it fifteen minutes after it is ripe.

Judge Moyer: The Blushed Calville is very good. It is about like the old Early Harvest in York State. Mr. Cook can tell you all about it.

Mr. Cook: I never had much experience with it. I did not think much of it because it scabbed so badly. I do not think it a good apple and do not think the tree stands well. I had it two or three years ago, but it failed for some reason or other. It scabbed so badly that it was not worth much. To my notion the Yellow Transparent is the best apple we have. It is good for home use and also for a market apple. It blights quite badly in some localities, but I think the Yellow Transparent is far ahead of the Tetofsky and the Blushed Calville.

Mr. Schutz: Is it earlier than the Tetofsky?

Mr. Wedge: They ripen almost at the same time with me. I was going to ask Mr. Cook in regard to the ripening of the Yellow Transparent. I was going to ask if it does not blight as a young tree. It is with me very much like the Transcendent crab. It is still growing and produces lots of apples. I do not like to have such a tree in our orchard. I do not like a tree that is blighting all the time. The Tetofsky was exactly described by Mr. Schutz. If the fruit would only hang on the tree, it would be all right.

Mr. A. J. Philips: There is a gentleman here from Bayfield where they have the Transcendent, and they do not blight there..

Mr. Schutz: The reason I do not grow it is because there is no market for it. It does not sell.

Mr. Richardson: It will kill back five or six inches only, while the Wealthy will hardly stand in our country.

Mr. Philips: I was speaking about Iowa.

Mr. Cook: I live in the southwest part of the state, and the Malinda winter-killed when the Wealthy stood perfectly.

Prof. Hanson: The Malinda did well in northern Iowa. I got some a few years ago that were top-worked on the Whitney, and in 1889 they killed away back.

Mr. Philips: The trees I saw in Iowa went through the winter of 1885.

Question. When should trees be sprayed and what benefit is derived from spraying?

Mr. L. H. Prosser: I have had some experience in that line. I have practiced spraying our trees for the codling moth, also for blight.

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I use bordeaux mixture, and the first year I used it I had difficulty on account of burning the foliage, but I found the trouble was caused by the lime not always being of a uniform quality. The test I used was to put a knife-blade into the mixture, and if there was no discoloration on the knife-blade it was all right. I spray when the blossoms fall off and use bordeaux mixture and use paris green to kill the moth, and I have very little trouble with apples being infested with worms.

Mr. Peabody: I had the best results from buying the materials already prepared. If you buy from a reliable firm, you will have no trouble getting good results. There are firms recommended by the U. S. Department of Agriculture that are reliable. I take a cup and dip it out and mix it with water so it is ready for use, and I have never had any trouble whatever with the quality of the material I used.

Mr. Hager (Wis.): In Wisconsin we use arsenate for spraying. We do not use much bordeaux mixture. We have had very satisfactory results from using a strong decoction of tobacco. It is wonderfully discouraging to insects and worms. We spray from the time the bud starts until summer.

Mr. Schutz: How do you prepare it?

Mr. Hager: I take the tobacco leaves, about half a barrel, or I fill the barrel and pack them down until the barrel is half full; then I cover it with hot water and let it stand for forty-eight hours.

Mr. Schutz: If you could not get the leaves, what would you do?

Mr. Hager: You can get them most anywhere. They can be bought anywhere of tobacco dealers or cigar makers.

Mr. Schutz: Does anybody know anything about dry bordeaux mixture? I have heard it highly recommended, and I know it has been sent out by Sears-Roebuck & Co., of Chicago.

Judge Moyer: I used it on my Blushed Calville, and they had no scab on them.

Mr. Richardson: Elmer Reeves is a great believer in the dry mixture. He uses it in preference to anything else.

Mr. Older: Fred Mohl, of Adrian, has been extensively using this dry spraying. He gets his from Kansas City, and he uses a machine to go over his orchard, and it makes a cloud of dust. He says it is ten times as easy to apply as the liquid and gives just as good results. He buys it in considerable quantities and says it is not expensive, something like $1.00 per hundred. It is fine like powder, and the wind carries it very easily.

Mr. Schutz: Does he get it ready for use?

Mr. Older: Yes, he gets it ready for use.

Mr. Carpenter: I used a dry mixture for two years, and it is just as easy to apply as the liquid, but if a man has a large number of trees on which to apply it he cannot do the work continuously because it can be applied only when the dew is on the leaves. Otherwise it will not adhere.

Mr. Schutz: What is the best way to apply it?

Mr. Carpenter: I have the kind made in Kansas City. I have a power machine. I use it on strawberries, and it sprays two rows at

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a time. I took two wheels of a wagon and put a sprocket wheel on one, which turns the fan, and it sprays three rows at a time.

Mr. Schutz: Where do you get your mixture?

Mr. Carpenter: There is a company that makes it in Kansas City.

Mr. Moore: Hogs serve a good purpose in the orchard. They get away with all the bugs and worms that infest the apples that fall off, but that is as far as they go. As a means of preventing diseases they are of no use—such diseases as scab, leaf rust, etc., and in order to cure and eradicate such diseases, we are under the necessity of spraying our orchards. The bordeaux mixture, my own mixing, has been my remedy, and I have used it with very good results. Four lbs. lime, four lbs. sulphate of copper, four ounces of paris green to fifty gallons of water. I spray that on my trees the latter part of May after the foliage is fully developed, and I have had that mixture stay on the leaf until September.

Question. Mr. Schutz: Can you prevent sunscald in cherries by having the top near the ground?

Mr. Cook: I have planted a good deal and let the trees come near the ground, but they will sunscald just the same.

Mr. Schutz: I have lost cherry trees by the ground being wet. You must have dry ground, or if you have any gravelly ground plant your cherries on that. If my ground had been underdrained, I would have had no trouble.

Mr. Cook: I think so; cherries do not do well on low land.

Mr. Schutz: My soil is high.

Mr. Cook: I presume the higher the land the better for cherries.

Mr. Schutz: It is better for cherries. I have raised lots of cherries, and I am going to have lots more. I have one hundred and fifty Homer cherry trees that are getting big enough to bear. I have enough for my own use and for the birds and have some left. If a man has seventy-five or one hundred trees, the birds cannot get all of them.

Mr. Cook: Do you think the Homer is the best?

Mr. Schutz: I do not; I had first rate success with the Wragg, but the wet has killed them.

Mr. Hager (Wis.): Speaking about soil for cherries, we have in northeastern Wisconsin the finest district for cherries in the northwest. It is the Sturgeon Bay district, and it has a peculiar formation of soil. It has something of a limestone bottom that has been scoured by glacial action. It is composed of sand, gravel, clay and chips that have been scoured by the glacier. Cherries have succeeded very well on that soil, and in some cases it has been necessary to quarry out some of the rock before they could set the cherry trees out. I believe is is more in the matter of soil than anything else.

Mr. Cook: What have you got?

Mr. Hager: O, anything—they cannot grow the Richmond.

Mr. Richardson: We have not got that kind of soil, and we have got to raise cherries on the soil we have.

Mr. Cook: Cherries do not seem to do well on the alkali soil we have out in the western part of the state; they come through the winter and blossom all right, but the fruit drops off.

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Mr. Johnson: I have a few trees, and they are on black, sandy loam.

Mr. Schutz: I believe the more you fertilize the tree the better. I think you can rob a tree of so much fertility that it makes it liable to sunscald.

Mr. Richardson: I have not much trouble, but in these wet years the leaves fall off; that is the trouble with my cherries. If we could carry the foliage clear through we would risk sunscald, and I would risk the winter—but we must have perfect foliage.

QUESTION.—"Which of the three following plants is of the most profitable, the strawberry-raspberry, the Canada thistle or quack grass?"

(Laughter.)

Prof. Green: That question answers itself.

Mr. J. F. Benjamin: I raised quite a lot of the strawberry-raspberry and could not supply the demand. I had two rows four rods long, and they did not bear so many at a time, but they kept right at it. The largest picking we had was from sixteen to eighteen quarts, but we could not pick that many every day; they bore from the time raspberries began till October. We liked them very well.

Mr. Husser: Quack grass is not so bad if a man makes the proper use of it.

Prof. Green: It is the same way with the strawberry-raspberry.

Mr. C. H. Brady: Mr. Wilfert raises a great many strawberry-raspberries, and I believe he makes more out of them than he does out of anything else he raises. He can sell all he grows at 10c a quart, and the people pick them themselves. I sold them at $1.60 a crate. They are used for putting up in cans. I sold all I raised, and I could have sold a good many more if I had had them.

Mr. W. J. Moyle (Wis.) There is one phase of this subject that has not been touched upon, and that is the possibility of making the strawberry-raspberry fruit on the ground. If it were possible to so regulate its growth as to be made to fruit on the ground, it would do away with the cane and all the fussing with pruning and covering, but so far as making any money out of the strawberry-raspberry is concerned, that is all nonsense.

Prof. Green: Well, hold on there, there are three or four here who say it is the other way.

Mr. Brady: Mr. Wilfert showed me a patch of about one-eighth of an acre which fruited very well, and he told me he got $70.00 out of that piece of ground.

Prof. Green: The financial value of a thing, that is what we are after.

Mr. S. D. Richardson: All the experience I had with it was that I was at a man's place at Valley Centre, and he had some growing in his garden. I admired them, and he said if there was a man against whom he had a particular spite, he would give him the strawberry-raspberry.

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SECRETARY'S CORNER

THE LATEST FROM PROF. HANSEN.—Sept. 22, 1908. "Just in from the Gobi desert sands. Too busy to write but work progressing rapidly. Hearty greetings to all my Minnesota Horticultural Society friends from the Transbaikal part of Siberia and western Manchuria."—N. E. Hansen.

DELEGATES TO WISCONSIN AND SOUTH DAKOTA.—Delegates have already been appointed to the annual meetings of the Wisconsin and South Dakota societies. Mr. E. A. Smith, secretary of the Jewell Nursery Company, of Lake City, will represent our society at the annual Wisconsin meeting, which convenes some time in February. The South Dakota meeting will have a representative from this society in Mr. S. H. Drum, of Waseca. Date of the meeting of this society not yet known.

DELEGATES TO THE ANNUAL MEETING.—Delegates to the annual meeting of our society have already been appointed by South Dakota and Wisconsin, the delegate from South Dakota being C. W. Gurney, the well known nurseryman and author, from Yankton, S. D. The secretary of the Wisconsin society informs us that the delegate from that society will be Mr. C. L. Richardson, of Chippewa Falls, Wis. Mr. Richardson is a young man of liberal education and of considerable experience in growing small fruits. He has been superintendent of horticulture at the northern Wisconsin fair for several years.

DEATH OF NILS ANDERSON.—Mr. Nils Anderson, of Lake City, died at his residence on Saturday, Sept. 29th, the result of a kick from his horse. Mr. Anderson was with us during State Fair week and made a fine exhibit of plums and apples, and spent most or quite all of the week there, and it seems hard to realize that we are to see him no more. A quiet, retiring person, and a sincere and earnest worker, one whose words were carefully weighed, and whose statements could be relied upon; one who had only kindly words for every one, he was sincerely respected by all who knew him. In Mr. Anderson's death the society has met a real loss.

He was especially known from his success in growing semi-hardy varieties of plums, his location being particularly favorable for these: Shippers Pride, a domestic plum; German prunes and some Japanese hybrids, he was fruiting and had for many years. These with a large assortment of native plums made up his usual exhibit at the State Fair.

MAKE PLANS FOR ATTENDING THE ANNUAL MEETING.—It is none too early to be making arrangements to be with us in Minneapolis during the four days of the annual meeting the first week in December. You need an outing, and this is the best time to get it. The railroad fares are low, and special rates at the hotels will bring the expense to a minimum, and when you see the diversification of the program and realize what opportunities are presented for your benefit, as well as pleasure, you cannot afford to lose this meeting, which promises to be by far the best ever held by the Minnesota Society. And don't come alone! Bring the wife, the son or the daughter, and interest some younger member of the family in the society, some one to take your place of service in the years to come. One reason so many prominent members of the society fail to have successors to carry on their work is for lack of creating an interest in the young people by bringing them to the annual meeting. Is this a mistake that you are making?

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BE A PLANT BREEDER.—It is especially desired that every member of the Horticultural Society engaged in any branch of work connected with plant breeding—the principal feature of this work being the growing of new varieties of fruits, etc., from seed—should be a member of the Plant Breeders' Auxiliary. There is no expense connected with such membership, simply send the name and address to Secretary Latham, and your name will be enrolled and the badge button sent you, which it is desired should be worn at least during the annual meeting. There are about 225 names now on the roll of the Auxiliary, and as every member suitably situated should be growing some seedling fruits or flowers the number ought to rapidly increase. Where do you stand?

SAVE APPLE SEEDS.—Don't forget the contest now on for which $700 is offered by the society, $100 a year, commencing with the year 1912, for best new varieties of apples grown from seed secured from this state and portions of the neighboring states. Full particulars as to this contest can be had by addressing the secretary. Every member should save at least a few seeds this fall from the best home grown apples at hand, preferably late keeping apples of good quality or those that have grown upon trees standing near varieties that are good keepers, where there was a probability of crossing. The late keeping varieties of seedlings that we are looking for will be the probable result of large plantings, but no one person can afford to plant and bring to maturity many new varieties. Let each one grow a few seedling trees. It will be found an interesting pursuit, and in a sense profitable, as the seedlings are likely to prove of some value. Every person saving and planting such seeds should make application to the secretary in the usual way as contestants for these prizes, and there is no expense connected therewith.

SAVE FRUIT FOR THE WINTER MEETING.—The secretary has made some such suggestion as this heretofore, but repetition may be of use to correct forgetfulness. We are just as desirous of making a large display of fruit this year as though it was a banner fruit year for Minnesota, and with the assistance of those of the membership who attend the annual meeting the high standard of our regular exhibit can be fully maintained. Please note again the premium list as found in the September number, and where it is desired to display fruit that cannot be well kept at home send it to cold storage, A. Booth & Company, Minneapolis, and it will be delivered at the place of meeting on the morning of Monday preceding the opening of the meeting. As far as convenient exhibitors with large displays should be on hand the afternoon of that day and get the fruit in shape for exhibition, so that when the meeting opens Tuesday morning the fruit room may be in shape. This is very important with an exhibition the size that our society makes.

Are you saving one or more pecks of apples for this display? The premium for this class is an amount to be divided pro rata amongst all of the exhibitors. Don't forget the display of top-worked apples, and bring all the seedlings that are of any commercial value, whether they have been exhibited heretofore or not. Premiums offered on these two latter classes cover the same area as last year, not only our own state but territory in adjoining states as noted in the premium list.

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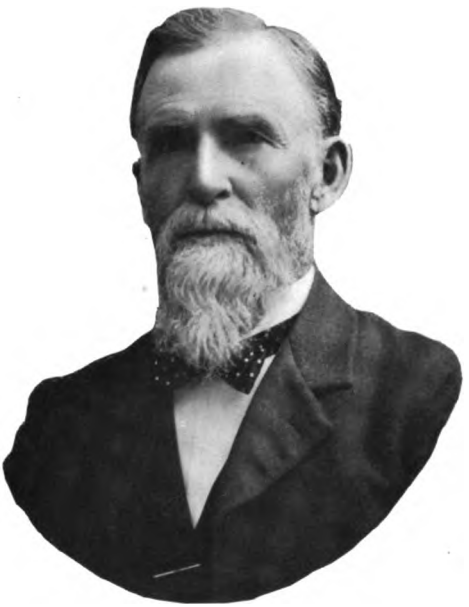

CHAS. G. PATTEN, CHARLES CITY, IA.,
Originator of Patten's Greening and other valuable seedling fruits.

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THE MINNESOTA HORTICULTURIST

Vol. 36 DECEMBER, 1908. No. 12

Patten's Cross-Bred Seedlings.

(A talk at the annual meeting when exhibiting specimens.)

CHAS. G. PATTEN, CHARLES CITY, IOWA.

Before proceeding with the talk on the fruit I have before me, I want to say a word in reference to what I said yesterday—with a little too much display of earnestness or enthusiasm—in order that I may set myself right with Prof. Hansen and also others who are working along the same line. I wish to say that there is very little difference between Prof. Hansen's ideas and my own in reference to the development of the breeding problem of trees and plants, yet we differ radically in some respects. Prof. Hansen takes the position that we cannot develop hardiness in the Pyrus malus seedling, and I claim, on the other hand, by a demonstration on my own grounds—and I have been in the work thirty-nine years—that Prof. Hansen is mistaken. We can develop hardiness and perfection out of even a tender variety by beginning on the Pyrus malus apple.

I want also to set myself right—and I think I can do so in a very few minutes—in reference to the stock for the apple, and I want to tell you the reason why the Siberian and common crab seedling will not make a successful orchard tree when root-grafted. About twenty-five years ago I made an experiment with some seventeen varieties of apples, including the crabs, on crab roots. The trees grew and developed nicely, and I thought I was going to be successful. The seedling seemed to be hardy, and I thought it was going to be an advance on the common apple tree, but in the fourth year they did not do so well. That year, and in the year following, several of them (it was in a rainy season) began to fall over on the ground. I thought that was a very singular thing. When examined, those trees, I found, had no root to secure them. They had a little main root, but that in itself was feeble, and that was the case with the majority of them. The Wealthy did better than the others and furnished some good trees, and the Perry Russet did fairly well also and furnished some good trees.

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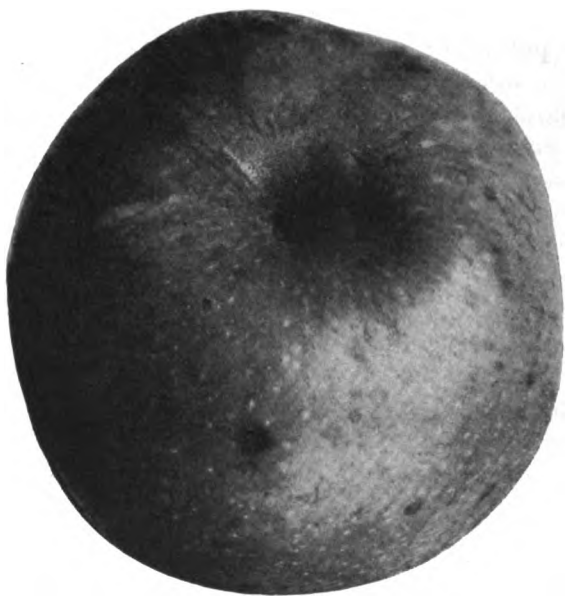
Mr. Wyman Elliot: Were they propagated on piece root grafts?

Mr. Patten: Yes, sir.

Prof. N. E. Hansen: And I have always warned against that.

Mr. Patten: I am going to tell you why this is with the Siberian crab, showing something of the peculiar way in which the return flow of sap is retarded. The sap is held in suspension, and the root is starved; and as long as the root is starved the top is starved; hence the falling over, the trees tumble over simply because they do not have any root. Now then, had these trees been stock-grafted one foot from the ground, it would have been better probably than close to the ground with these crab seedlings. In order to furnish that even bal-



Seedling of Patten's Greening crossed with Grimes' Golden—No. 8.

ance between the diametrically opposed character of trees, you must strike, or find, that even balance between the stock and the scion which is required. For instance, you graft trees on the Siberian, and if you graft them at the root they would both top and root be reciprocally starved, but if grafted upon six to twelve inches of the Siberian stock, you would secure the balance between them that you ought to have. When stock-grafted near the ground a reasonable balance is maintained. The cells of the little Siberian are so much smaller than the apple that in the return flow of the thickened sap it cannot pass freely into the fine-grained cell of the crab, hence the root is first starved and then the top.

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The point I wish to make is this: that we should make a comparison between the cherry crab and the larger Siberians, such as Brier Sweet, Whitney and Transcendent, to determine the relative hardiness between them and their adaptability as stock for the apple. However, the seedlings of the small yellow and cherry crab have already been proven a failure when used for root-grafting. They should be tried, however, for stock grafting, especially in western Minnesota and Dakota. These larger crabs are a generation farther removed from the little Pyrus baccata, or Siberian crab, and there is no doubt but they will furnish better stocks for root-grafting the apple.

Mr. C. S. Harrison (Neb.): How is the Hyslop?

Mr. Patten: It is too much crab.

Mr. Wyman Elliot: How is the Transcendent?

Mr. Patten: I would try it. It furnishes good stock.

Mr. H. F. Busse: It is subject to blight.

Mr. Patten: Yes, I would prefer to plant those that are not subject to blight.

Now to take up the subject of the breeding problem of the apple. The first planting thirty-nine years ago was made with the seeds of a whole barrel of Yellow Bellflower grown on the prairies of Wisconsin, far enough north to be thought to be of value. I had broken the ground on a prairie hill, where the weather bureau has demonstrated by years of observation that the temperature in winter is three and one-fourth per cent of one degree less than at St. Paul, so I had a good place to test things. I made a complete failure because I did not understand the climate at that time and did not understand the protection of the seedlings, of which I had a thousand, and in January the snow was blown from those trees, and I lost them all. The next year I made a planting from seed obtained nine miles north of Portage, of Duchess of Oldenberg, from an orchard in which were growing Rhode Island Greening, Spitzenberg, English Russets, Tallman Sweet, Fameuse and the like. I planted seeds of the finest specimens of Duchess I ever saw.

The result was I secured this Patten's Greening apple. The Rhode Island Greening stood in the adjoining row, two or three rods away from where this apple was produced, and from the specimens I have seen many times I am thoroughly convinced, from the seedlings I have grown from this apple, that the Patten's Greening was a cross of the Rhode Island Greening. That certainly was very fortunate; for it has furnished to your state—I think I may say it modestly—it has furnished to your state hundreds of thousands of dollars in wealth already, besides what it will do in the future.

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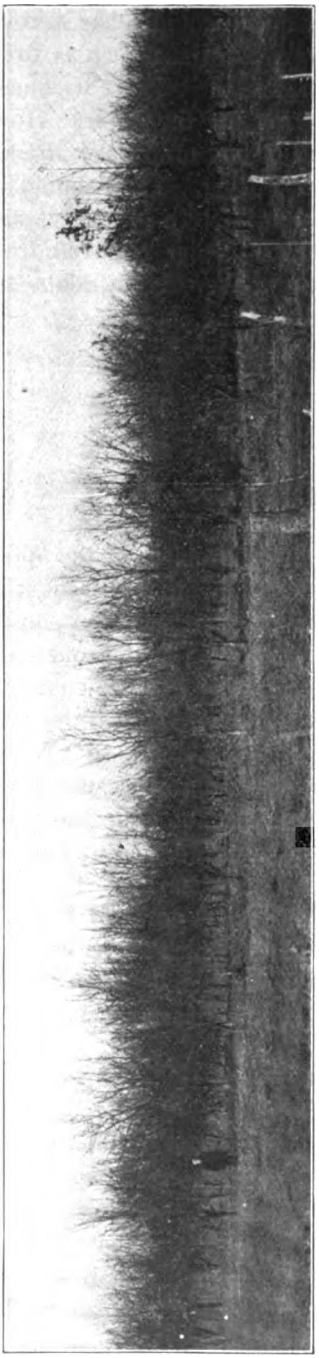

Twelve to sixteen year old orchard of cross-bred varieties on experiment grounds of Chas. G. Patten.

Sixteen years ago I began to elaborate the breeding of the apple by a persistent effort, and I have followed this breeding work persistently ever since, and I think I may say in justice to myself, and for your benefit as well, that I have the oldest apple breeding station, in any such proportion as this, in the United States and, I think I could add to that and say truthfully, in the world. I made an exhibit at Jamestown at my own expense, the most important cross-bred collection of apples that was ever made in this or, I believe, any other country.

I have had some sixteen or more different seedlings of this cross (indicating) between the Patten's Greening and the Grimes' Golden. Here I have another line of breeding represented in these two apples (indicating). The beginning of these two apples I just showed you was between this crab and the Bailey Sweet apple. grown at Pleasant Prairie, about four miles north of Baraboo, where my father lived. Mr. Brier planted the seed of the crab and got what we call the Brier Sweet. I then took the pollen of the Pound Sweet and put it upon the Brier Sweet crab, and thus fertilized the result was that I produced these two apples and one or two other apples. The remarkable feature about this effort was that of seven out of eleven seedlings I produced from this cross every one is sweet, and two or three of them are very sweet. This apple (indicating) is a very delicious sweet apple. I

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presume we might make the effort twenty times over in this kind of breeding, and we would not be able to produce an apple in which any single characteristic was so intensified as in these specimens.

Here is the effort of the breeding of the Jonathan and the Gideon's Mary. Here (indicating) is a crab known as the Gideon's Mary. We took the Jonathan pollen and placed it on the Gideon's Mary blossom and produced this apple (indicating), a really sweet apple, and this is only about two-thirds of the size; it is not only a beautiful apple, but it is sweet and of good quality.

Again, the same cross of this crab and the Jonathan produced this apple (indicating). So you see what variation there is in the same line of crossing with other varieties; and, when you think that we can take a measly crab like this, and in one generation of crossing with a high quality of apple, like the Jonathan, produce an apple of this kind, you see that this is a work that we ought to persist in, because we can create anything we undertake to create, whether it is hardiness or anything else. I am as positive that we are able to breed hardiness as I am that I am alive. I have done it over and over again. I have a tree of the Fall Orange that I believe will stand forty per cent more than the original Fall Orange.

Prof. N. E. Hansen: What is the father of it?

Mr. Patten: I think that it is a self-pollinated variety.

Now here (indicating) is a cross that goes backward. This is what we should expect sometimes. I took the Red Canada and cross-bred the Gideon's Mary on the Red Canada. Some of you fruit men know what it is—about this size (indicating) and a nice winter apple. I took the pollen and pollenized the Gideon's Mary and got this, a large crab. I pollenized it on the Malinda and got nothing satisfactory. Then I pollenized the Greening and got nothing, so we can drop that out. I will say, however, in this breeding problem I have crossed the Soulard by crossing the pollen of a Massachusetts apple on the Soulard crab. That was my first effort in which I succeeded in cross-breeding the apple.

Here again is another effort in cross-breeding the Grimes' Golden. This is also cross-bred with the Soulard crab. It is an entirely different form and interests such men as Prof. Hansen. There are a large number of these little knobs on the stem of this apple, and, this knobbing of stems was produced in another experiment sixteen years prior to this one. So there must be something in the nature of an extreme cross that breeds that peculiarity.

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Here is another cross (indicating) of the Wolf River and Brier Sweet crab. This is a seedling of the Wolf River and the Brier Sweet, very beautiful. Here also (indicating) is another seedling of the Brier Sweet and the Wolf River. This is a strong tree, very rugged, but the apple is only good like the Wolf River. But this one (indicating) is quite a good, sweet apple. It is a summer and fall apple.

Roman Stem No. 10.
One of Chas. G. Patten's cross-bred seedlings.

Mr. H. F. Busse: I obtained some seedlings from you some twelve years ago; one was called the Duchess No. 4 and another the No. 8. What has become of those?

Mr. Patten: Those were simply from the seed of the Duchess and have nothing to do with this.

Mr. Busse: One was a fine apple and never blighted and was perfectly hardy.

Mr. Patten: Duchess No. 8 is exceedingly hardy, even more so than the Duchess of Oldenberg. In that hard winter of 1885 Duchess No. 8 on my ground was about four inches in diameter, and in testing its hardiness I did it in a rather peculiar manner, boring into the tree

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with a gimlet about three feet from the ground and finding the heart wood bright. I never did much with that tree although I heard much about it, but I have not propagated it as I should have done.

Mr. Busse: It does not blight particularly and bears good sized apples.

Mr. Patten: Here is an apple (indicating) I call the Malinda seedling. Now I am getting to a point to which I wish to call your attention. I looked over that interesting exhibit of Mr. Perkins and found in the sixty varieties he has on the table only six uncolored apples. Now then, when you come to think of it, it seems quite strange, but I discovered in my work long ago the principle of breeding color, as I believe—although my judgment was questioned on that claim—and I was not sure for some length of time, till my observation told me that I was correct, that we could breed color as well as anything else. And when you come to consider that Mr. Perkins had Duchess of Oldenberg, Haas, Tetofsky, Wealthy and Perry Russet, five kinds, all colored apples but one, in that orchard, and the result is that there are only six uncolored apples in the whole lot on the table, I think that is one of the best demonstrations possible of the fact that we can breed color. There can be no question of taking that apple (a colored seedling of Ben Davis) and producing color with the potency there is in the color character of the Ben Davis. There would be no more question of what would be produced from them than there would be in what was produced from the Jonathan and Fameuse. This is worth knowing, because color has a commercial value.

Here is an apple (indicating) I produced from the seed of the Fameuse. This is one of my selections, and when I speak of selections in my work I mean that I avoid haphazard work. These selections in my work might be called semi-scientific breeding, because through this system of breeding I have produced several valuable apples. There is no question about it.

Here is another Ben Davis seedling (indicating) which takes its characteristics from the mother's side. It is an undoubted cross with the Jonathan. It looks like a Jonathan in tree, and has much of the Jonathan flavor and appearance in fruit.

Capt. A. H. Reed: From cross-pollenization how long does it take to find out the result?

Mr. Patten: It will take from five to eight years to originate the fruit after cross-pollenization.

I have here some views of what I have demonstrated in my orchard to which I wish to call your attention.

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This here is something akin to what Prof. Hansen showed you yesterday (indicating). It is a tree bred from the little Repka Malenka. Many of you know of that little slow growing, sparse growing Malenka. This male tree originated down in Arkansas—but that is too far south to go for an apple—but the curious thing about this is that the mother parent seemed to have been lost sight of in these seedlings.

Here are six large trees (indicating) three times as large as the Repka Malenka of the same age, and they look as though they were one variety. To any one but an expert they present the appearance of a single variety. They have not borne yet, but I believe this coming year they will blossom. I pollenized this for the purpose of securing long keeping winter apples and getting the hardiness represented in the Malenka.

Then I pollenized the Patten's Greening with the Black Annett. The Patten's Greening, as you people know, is a remarkably hardy and vigorous tree. The Black Annett is a good deal like the Jonathan, comparatively slender growing, and it has given me smaller trees than if I had planted the uncrossed trees of Patten's Greening. I make a much finer demonstration than that. I have a cross of the Black Senator, which is another one of those. The Black Annett in this second cross is entirely lost sight of. There is not a single tree that has scarcely anything of the characteristics of the Black Annett apple. The trees have all upright limbs and have the strong appearance of the male tree. Then I have other crosses. Here is one (indicating). I took the Williams' Favorite and pollinated the Brier Sweet crab and produced the same results. I crossed the York Imperial on Malenka and produced the same result again. So there is no question but that we can go forward and breed form in trees just as well as we can breed anything else. This is something for the future orchardist to know, that he can breed hardiness, vigor and form.

Mr. Geo. J. Kellogg, Wis.: Would not the Hibernal be the best fruit to breed on?

Mr. Patten: For a northern country it would be one of the very best.

Mr. Kellogg: A good many would be interested in hearing you describe the keeping qualities of these apples.

Mr. Patten: Here is this cross of the Patten's Greening with the Grimes' Golden—we have nothing on the table that is a longer keeper. This will keep until January and February without difficulty. So you see there is no question about breeding keeping qualities into an apple.

Mr. Kellogg: How is that apple you said was a cross of the Jonathan and the Ben Davis?

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Mr. Patten: No, it was the Gideon's Mary instead of the Ben Davis. The dominating influence of the hardy, early maturing Gideon's Mary lowered the keeping quality in the cross. The Jonathan is not a long keeping apple, so when you breed with this Gideon's Mary you cannot expect to have much keeping quality.

Mr. Wyman Elliot: If you had taken the Gideon's Mary and had taken some long keeping crab would it not have produced a long keeping variety.

Mr. Patten: Most likely it would. Just as in every other breeding effort.

Mr. C. S. Harrison, Neb.: Does the soil have an influence on the color of the apple.

Mr. Patten: Col. Brackett tells me that they have made exhaustive experiments at Geneva, N. Y., in that direction and that soil has no effect.

One more remark in reference to Prof. Hansen's effort in breeding the plum he showed here. He showed his plum at Jamestown, and the interesting fact about it is that the male parent has dominated over the wild plum so as to give color, form and size, also quality in a good measure, but there is another feature in the presentation he made here which I do not like at all. I like the vigor and quality he has produced, but I do not like those thorns; and I have no doubt but that Prof. Hansen in his next effort will endeavor to do away with those thorns, because we are going to do away with the thorns on our cultivated plum trees.

Reduce the Cost of Distribution.—There exists today, between the grower and consumer of apples, an expense that is prohibitive to consumption, even when the price to the grower is only $1 or less per barrel for the fruit. I brought this matter to the attention of Missouri apple growers in 1906. At that time the jobbing price of apples on the market was $2.25 per barrel. The retailer was charging 40 cents per peck, or $4.80 per barrel, a profit of $2.00 per barrel after allowing 55 cents per barrel for shrinkage, which is 25% of the cost price and a liberal allowance. In December, the same year, I made inquiry in another city, of railroad men, what their families were paying for apples. They said 40 cents per peck. At that time in that city the jobbing price was $2.25 per barrel. At 40 cents per peck, apples are a luxury to the masses. At 25 cents per peck, they are an available, healthful food product, and consumption would be increased tenfold.

I will cite another case in proof of this contention. During this last winter at Montrose, Ia., three retail stores were handling apples, retailing them at 50 cents per peck, and did not sell an average of one barrel per day for each store, and that in a town of 1200 people. Mr. F. H. Glancy, a dealer, decided to ship a carload of apples into this town. He got busy with the telephone, not only with the town people, but the farmers in the country, told the people that on a certain day he would have a carload of apples and would sell them at $3.00 per barrel. The car arrived, and he sold 100 barrels in one day. Soon sold the car out and ordered several more cars.

In my home town, Springfield, Mo., retailers charged last winter 50 to 75 cents per peck for apples that cost them $3 to $4 per barrel. Not one-fourth the apples were consumed that would have been if they have been retailed at 35 to 50 cents peck, which price would have yielded a profit of $1 to $2 per barrel to the retailer, and with which he should be satisfied.—Geo. T. Tippin, Missouri, in Orange Judd Farmer.

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Care of Nursery Stock from the Time It Leaves the Nursery Until It Is Planted.

D. M. MITCHELL, OWATONNA.

(Southern Minnesota Horticultural Society.)

There are very few, if any, actual growers of nursery stock who do not take pride in producing and sending to their customers a first-class article. A grower who takes this pride in growing a good article also likes to see it reach his customers in the best possible condition, as the nurseryman's success depends upon whether his stock proves a success or failure with his customers. There is then, I think, no use of my going into detail as regards packing stock by the nurseryman. I will say, however, that in the rush of the season be very careful that no careless work is done.

A great deal of stock is injured by being delayed by railroad companies; every season we have shipments delayed through no fault of ours. Express is very seldom delayed, but express offices are always warm, and unless stock is called for almost immediately upon arrival at destination damage is very likely to occur. The subject of transportation is a very vital one to every nurseryman. Our National Nurseryman's Association has for several years done a great deal of work along this line. They have accomplished some good, but in my opinion delayed shipments is our worst feature with transportation companies, and as yet the National Nurseryman's Association has done very little to remedy this. I do not know of any remedy for delayed shipments, but it seems to me that when we deliver our stock to the transportation company in good condition there should be some way of making them deliver it to its destination without uncalled for delay.

After stock reaches its destination in good condition, it is very often damaged before it reaches the grounds where it is to be planted. Failure of the purchaser to call promptly for his stock causes a great deal of loss.

I wish every purchaser would look upon the nursery stock he has bought as an investment and as such would look after it. If he buys only a few apple trees, let us do our best to have him take the best of care of them, and almost before we know it he may be among our best customers.

After stock gets on the planter's ground it is often damaged, yes, actually killed from exposure. I have very often seen a bundle of nice trees left entirely unprotected lying in the wagon or on the ground beside the house until the morning following the day of delivery.

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Trees should never be taken to the place where they are to be planted until the holes are dug. Then take only a few at a time, leaving the balance of them in a shady place—and be sure they are kept moist. It is surprising how often evergreens will be unpacked and exposed to the sun and wind. Never unpack evergreens until ready to plant them. They are a very difficult thing to make grow when improperly handled, but when properly handled they are as easy to grow as almost any other tree.

I have had people say to me, "It seems as if I can never have any luck with my trees." I contend there is no luck about it. It is a science, and let us educate ourselves to it. If we become acquainted with the different species and what we can do with them, we shall soon find that we are successful with many kinds that have in the past proved a failure.

Top-Grafting.

C. M. JENSEN, ALBERT LEA.

(Southern Minnesota Horticultural Society.)

With the introduction of the hardier varieties of apples into Minnesota came a re-awakening of interest in fruit-growing. As a result, nearly every farm has its apple orchard.

Of the large number of varieties recommended and sold, it is but natural that some should prove failures for some reason. They might be lacking in hardiness or the quality and quantity of the fruit be disappointing. It is the varieties that possess hardiness but lack quality that can be made profitable by top-grafting. By top-grafting is meant the grafting of one variety into the top and limbs of another variety. The most of you have probably had the art of grafting explained to you, so I shall not go into details about it.

Top-grafting may be started in the spring as soon as the weather is warm enough so that the grafting-wax can be kept in good, pliable condition. The trees selected for top-working should be perfectly healthy. Any sized trees can be top-worked, but, as a rule, I do not think that it will pay to top-graft a tree that is over ten inches in diameter.

Cut the branches back as close to the trunk as is practicable, even if it makes a stub two inches in diameter to be grafted on. Setting the grafts too far from the main stem will make the branches top-heavy after two or three season's growth, and they will bend over

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and break. It also exposes the tree to sun-scald. The grafts should be well waxed and capped so as to exclude the air.

Some varieties that it will pay to top-work are as follows: Hibernal, Peerless, Longfield and in some cases Duchess and Patten's Greening. There are several varieties of crab apples that could also be used.

As to the varieties to form the new top. We have only one that has nearly all the requirements of a commercial apple, and that is the Wealthy. The Northwestern Greening and the Malinda might be used to a limited extent. Close observers claim that top-grafting improves the size, quality and color of an apple.

As it is the dollars and cents side of the question that we look at when planting an orchard, I will give you the price per hundred pounds that was paid for some varieties during the past season by one of the largest buyers in southern Minnesota. Hibernal and Longfield brought 75c; Duchess 75c to $1.00 and Patten's Greenings $1.00 to $1.25. The Peerless does not bear enough apples to get on the list. Wealthy apples brought $1.50 and Northwestern Greening and Malinda $1.25 to $1.50. Having a tree in your orchard bearing 75c grade of fruit, which do you think is best, to leave it as it is or top-work it and double your income from it.

Now, as to the cost of top-grafting a tree. Those of you who understand grafting can easily figure out what it would cost you. To others I will say that it depends upon the size and variety of the trees. A Peerless taking about twenty grafts could probably be top-worked for fifty cents, while a Hibernal of the same age might cost two or three times as much.

One thing more before I close. If you have any work to be done in your orchard which you do not understand how to do yourself, do not employ any one who is not thoroughly posted in the work. Go to your nearest nurseryman and consult with him. He will give you advice that will be worth money to you.

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Strawberry Culture for Commercial Purposes.

H. W. HARRISON, LEROY.

When God placed Adam and Eve in the garden of Eden, He gave them free access to all of the luxuries except one, the apple. That one we are expending so much time and energy on to propagate and improve that we have lost sight of many of the smaller fruits which our Heavenly Father has so graciously provided for us. The strawberry I consider one of His best gifts, as I have had ten years experience in raising them. I have learned some things, this especially, that I do not know much about it, but I will gladly give you the benefit of my experience.

Residence of H. W. Harrison, proprietor of Oak Valley Fruit Farm.

Preparation of the Ground. Select a piece of ground where water will not stand. Cover the ground to be planted with a heavy coat of well rotted manure. Then plow to a depth of eight inches, thoroughly disc and harrow the same until free from lumps. Mark your ground, rows four feet apart and cross mark twenty or twenty-four inches apart. If you have clay subsoil near top of ground, ridge your ground before marking.

Then get Senator Dunlap and Warfield plants of some reliable grower as near home as convenient. Be sure that plants are healthy and have good roots. Don't be afraid to pay a good price for a good plant. "Best is the cheapest" is a maxim more true in this instance than any I know of. Don't plant too early. For the past four years I have not planted my bed until after the 20th of May, thus giving

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my plants a chance to get thoroughly started before transplanting, and they will grow right along.

How to Plant. I use a spade and a boy with a pail, with a little water in the bottom in which the plants are placed ready for planting. I then place my spade on the cross in the row, pushing it down as far as the roots of the plants will reach. I push the handle from me, then pull toward me quickly, which leaves an opening down in front of the spade in which the boy with a dextrous flourish will put the plant, holding the same with roots hanging straight down but spread out, while I withdraw the spade. I press the dirt firmly against the root with my foot, being sure to leave the crown just level with the ground.

Cultivation. Within twenty-four hours after planting cultivation should begin. I prefer going over them with the garden rake, as the soil is left in perfect condition by this process. You may

Strawberry field, four months after setting, at Oak Valley Fruit Farm.

then start the cultivating, and go through once each week—twice is better. I use the twenty-four-tooth weeder, and five-tooth cultivator, going through with the cultivator first, and following with the weeder crosswise right after. This saves lots of hoeing, as you can keep this cross work up until runners begin to set, by which time most of the weeds are destroyed. I use the matted row system, allowing them to make twenty-four to thirty inches wide, and cut off all runners after that, but continue cultivation until ground freezes. Once in two weeks during the fall is sufficient. Be sure to have your rows raised three or four inches higher than the ground between the rows at the time you finish cultivating, to avoid water standing on your plants during winter.

Mulching. As soon as the ground is frozen sufficiently to hold up a team, draw on your slough hay, which should be cut early enough to be entirely free from weed seed. Cover every plant very lightly but sufficiently to stay on all winter.

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Time to uncover in the spring. Watch your plants, and when they begin to push through the hay rake off most of it and leave between the rows.

Picking and Marketing. I prefer girls from twelve to forty years of age, as they are neater and more conscientious than boys for pickers. Have good berries all the way through the box. If you have small, inferior berries mixed, sort them and sell for less price. Fill every box heaping full of ripe fruit, and you will have them half sold. Market the same day if possible.

Care of bed after picking. Immediately after you finish picking mow the bed over, rake everything on the hay between the rows and burn it. Next take an eight-inch plow and back furrow between each row, leaving about sixteen inches of the plant; then take your team and harrow and cross drag until the furrows are filled and the soil around the plants loosened. Then put on another coat of rotten manure and cultivate as before.

Conditions best adapted for commercial small fruit raising: First, sandy loam soil free from weeds. Second, a love for that kind of work. Third, a determination to raise the best, and nothing but the best. Fourth, then you must be a Roosevelt man: that is, to have had the stork visit your home eight or ten times within the past fifteen years.

Observations on Fruit Raising in Older States.

C. H. FARNSWORTH, ALBERT LEA.

(Southern Minnesota Horticultural Society.)

During a trip through New York and parts of New England at the time of fruit ripening an endeavor was made to note conditions where, in some parts, fruit culture had progressed for more than a century. It was after a long absence, and appearances were much changed from former years.

Compared with Minnesota there is a vast difference in all conditions. The area of farms and orchards east is much smaller than the average in the west. In the east there are failures from different causes in the old and in the newly planted orchards, examples of success in high culture and total failures for want of culture, as may be found here. Former thrifty orchards have died out to a few scattering trees from being left to take their chances with the stock without care. Between complete success and total failure, there were all the grada-

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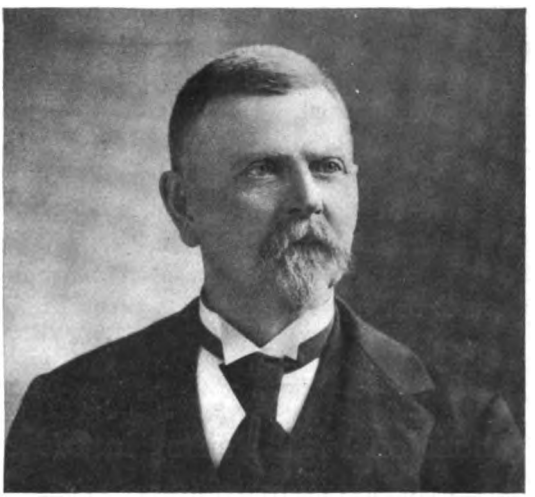
tions of partial success. Nothing was more attractive than the successful culture, where all the tops and trunks of trees were well trimmed, and there were no signs of blight, worms or insects and where all dead trees had been kept replaced.

Judging from appearances the common fault of the farmer as an agriculturist is that he gives the orchard as little care as though it were a shade tree excepting at the time of gathering fruit. East or west this causes too many failures, loss and waste of labor, land and trees. Such sights lead to the belief that thousands of perfect trees sold by nurserymen are annually killed by neglect. Such appearances are con-



C. H. Farnsworth, of Albert Lea.
A veteran of the Civil War.

vincing proof that until a man firmly resolves—and has the fortitude to keep his good resolution—to give his trees the culture and care required, it would be wise for such a person to defer planting trees to see them die from neglect. Only a portion of the people seem to realize that every year there is need of care, skilled labor and protection for all trees and shrubs to save them from financial failure.

In the east the conditions of a sterile soil, contour of the country, the proximity of areas of land to large bodies of water, that have great influence, cause one to believe that locality is better adapted to fruit raising than to any other culture unless it be forestry. In New England, bordering on the Atlantic ocean, horticulture has been in progress for over a century. The state authorities compel property

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owners to protect their fruit and shade trees from the ravages of all insects, at the proper season of the year. If not done by the owner, the authorities send inspectors and laborers to do the work, and the expense is charged in the next year's taxes.

In the cities and suburbs all the shade and other trees were encircled with a band of burlap, and under this there was a coat of tar preparation prescribed by the state scientist. This is intended to protect the trees from the ravages of the moths that climb the trees to devour the tender leaves in countless numbers. The "brown tailed moth" was said to be the worst and most numerous of enemies. In the early winter the nests of all insects are destroyed that are found in all fruit trees. New England authorities are vigilant, and this causes the owners to be more so. This action of the authorities was made necessary by the neglect of those who left moths and insects to multiply and scatter to adjoining trees that had been cared for.

It appears that in New England there is more interest and a more scientific culture of fruits noticeable than in most any other parts.

In the east they have a greater variety of apples than in the west, and, as here, the Wealthy apple and tree are a favorite with the people and horticulturists.

Last year in all parts of the east the fruit crop was a failure from late frosts and a very dry season, making all fruits very scarce and poor in quality, even as far west as Michigan.

Around Buffalo, Niagara Falls and across the line over in Canada there is strong evidence that there is a growing interest and expansion of fruit culture. Numerous vineyards of recent setting were seen, some too young to fruit.

The soil in these parts is sandy, but there is a flourishing growth and increasing acreage. There is said to be quite a large territory on both sides of the Niagara river that is favorable to fruit culture from being unusually exempt from late and early frosts. There are several miles square that are thus favored, and the cause is attributed to the adjacent bodies of water and the air currents at the right time of the year. Certain it is that within a certain district the fruits flourish better than outside of the "frost line."

In the east there are some admirable examples of what can be done by devotees of horticulture. Where money and labor have been lavished on grounds and fruits, the sight is tempting and beautiful. The natural protection of woods and forests in the east is no more than on the western prairie. With the exception perhaps of the state of Maine the whole country has been denuded of timber that is of value in this

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direction. The mountainous portions afford favorable localities for shelter and protection from the severity of storms.

From observations taken in the localities visited, it is evident that not all of the ancestors of the present generation educated their children up to the high standard of enthusiastic horticulturists. And the same is true of the west. And when one generation fails to give good culture to the fruit that their forefathers planted, there must come a retrograde due to that indifference. It is our contention that it is not conducive of success for any generation to depend entirely upon the men of genius and wizards of each generation alone for education in horticulture. Nor is natural ability sufficient. It is impracticable to depend entirely upon the aid of the Burbanks. Their work and education is too high and scientific to be practical in common horticulture. The mass of the people do not learn from them. As it is now, our Edisons and Marconis invent great things, but there must be the large host of operators along the telegraph lines. Thus we see the necessity of educating the children of each generation in practical and successful horticulture. This must be the main dependence.

If enthusiastic and successful horticulturists do not find their children endowed with the same characteristics as their parents, there is one thing they can do for them in their early life: that is to strive earnestly and aim to give the young practical education in the elements of horticulture and see that they learn to select, plant and cultivate all that is grown. It is essential that you provide the ground, trees and the settings and give patient, practical instruction and supervision of their labors. With these kindly aids it will take but a brief time to make them intensely interested in nature and horticulture. "As the twig is bent so the tree inclines." As is often asserted, the best crop raised east or west is the crop of children. It pays best and deserves the very best education in horticulture we are able to give them. The public school system was not intended to expand in education so as to relieve parents of their moral and domestic duties as instructors of their children.

Magical Fruit—Beware—Trees planted this year and apples the next is the latest bunko proposition in the agricultural world. Not only that, but each apple weighs a pound. From far-away Japan comes this wonder of all wonders. It is the "Alaska wheat" of the oriental kingdom. Some great daily or metropolitan weekly will now probably bring out this marvelous find. Orange Judd Farmer says: " 'Don't bite.' 'With God all things are possible.' Not so with man. Let the other fellow try it first. Let the experiment station get a whack at it—that is, if they are not asleep as they were when the Alaska wheat man got by the dead line. Don't, don't, don't and then again don't!"

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Evergreens.

JENS A. JENSEN, ROSE CREEK.

(Southern Minnesota Horticultural Society.)

It is now nearly forty years since I became a resident of Mower country, and in looking back I recall that there was then very, very little in the nature of windbreaks on the prairie, in some places a few willows. The first evergreen trees I saw around there were on the farm of A. V. Allice, of Austin. That was about thirty-five years ago. In the winter they looked very nice, when the prairie was covered with snow. How beautiful the green looked on the white sheet of snow!

Some twenty-six years ago J. J. Furlong put out an evergreen grove. I think there were about two thousand trees, not less than that. They are now about one foot in diameter and about sixty feet tall. They make a fine ornament on the place.

In 1892 I invested with C. Ruland $20.00 in evergreens. Mr. Somerville's lecture at the farmer's institute was the cause of my starting. I know a number of our neighbors laughed at me because I had money to throw away on evergreens, but the laugh has changed years ago, and they are all having evergreen groves on their places now.

The same time that I started at Rose Creek, Chrisgans started near Dexter, and became a missionary on evergreens in that section. And now you will find evergreen groves started all over that part of the country.

Now I have been talking about the beauty of evergreens. Have you ever stopped to think what an acre of spruce or pine is worth at thirty years' growth? If an acre can grow five hundred trees in thirty years at the present price of timber, it would be worth about $4,500.00.

"ORANGE JUDD FARMER" ON OUR STATE FAIR FRUIT EXHIBIT.—"The fruit exhibit was fine, considering the short crop of the season. In all the northwest the crop of apples and plums is short. This is largely the outcome of the wet weather at the time when the trees were in bloom. Despite this the array of fruit was both large and attractive and almost faultless in its arrangement."

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Two Minute Talks.

(Made at the close of the Annual Meeting, 1907.)

The President: We shall have to draw this discussion to a close, and we will now take up the closing exercises on the program. It has been customary to call upon the delegates from outside of the state and upon some of our own members to talk just two minutes and no more at the close of our annual meeting. That is not a long time to make a speech, and you have got to get right at it and hit the thing right in the middle, say just what you have to say, so that somebody else may have a chance. I am going to call first upon our good friend and distinguished guest, Col. Brackett.

Col. G. B. Brackett (Washington): As I sat back there a little while ago and looked at your motto I thought it was an appropriate one, "By their fruits ye shall know them," and any one who goes down stairs and looks at your fruit will know what you have been doing here, and I feel that I shall go back to Washington a wiser man than when I came here. I had no idea, although I have met some of the members of the society and talked with them about your work, I had no idea of what you were really doing here, and it is certainly a great pleasure to me to meet with you upon this occasion. It was a great surprise and a happy one. And I shall not forget very soon the new acquaintances I made since I have been here, and the privilege I have had of being permitted to look into the faces of the men who do this work. I have not been familiar with your work except through your reports, but any one coming here and seeing what you are doing cannot help but believe you are a band of workers. I am sure that of all the societies I have met with, I do not know of any whose interest exceeds yours in this great work and the harmony you are working under. It is the most perfect organization I have ever met with. There are no ornaments in this society, you are all workers, and you are working as a unit with one subject in view, to obtain fruit that shall be adapted to this cold climate.

I do not wish to detain you any longer, but if there is anything I can do I shall be glad to help you. If there is any publication that the department is issuing, if you will send your names in and write to me I shall be glad to furnish you with anything it is possible to send you.

With these remarks I bid you adieu, and may God speed you in your work. (Applause.)

The President: Next I will call upon Mr. Kellogg. Mr. Kellogg is so much one of us, although from another state, that it seems we could not spare him from a single meeting.

Mr. Geo. J. Kellogg (Wis.): Mr. President and fellow members, I have always considered myself a member of this society, but last year you honored me with a life membership, and I was so taken back that I did not fully thank you for the honor. I have been surprised for the last twenty years, have been surprised a good many times, and the surprise increases every year. The

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show of apples on Mr. Patten's table from Iowa is worth a thousand dollars to the fruit interests of this state. There is another interest in the top-worked apples on the other tables. I have been top-working trees for a good many years. I have now one Fameuse with forty varieties growing on it, and I have about forty varieties on other trees and many others coming into bearing. That is one of my pet pastimes. Eight years ago I turned the nursery business over to my boys and commenced to retire from hard work, and I commenced to retire by setting out 800 varieties of strawberries, and I retired also on the eight hour system, eight hours in the forenoon and eight in the afternoon (laughter), and I am almost a boy again, but while I have not an ache or a pain I do not know that I shall see any of my seedlings fruit. I have seeds in my pocket now, and I shall keep on planting. I believe I shall live to see this society pay that thousand dollar prize, but I don't believe it will be done for twenty years. It has got to be proven, and it takes years to do that. I thank you and wish you God-speed. (Applause.)

The President: I will next call on Mr. Gardner, of Osage, Iowa. We are always glad to hear from Mr. Gardner.

Mr. C. F. Gardner (Iowa): Mr. President, I feel a little bashful and backward about speaking from the platform. I thought I might be called upon to say something, and so I took pains to write down a short oration, and I spent about two hours last evening rehearsing it at the hotel. I went to bed and slept the sleep of the just, when I was disturbed by some one entering the room. I immediately got up, and the man ran out. I didn't miss anything but that manuscript, and I thought the man had somewhat the appearance of Mr. Philips. If he gets up and gives my oration you will know where it comes from. (Laughter.)

I am always glad to come to this meeting, and it gratifies me very much to see how finely you appreciate the services of one of the fellow citizens of my state who has done and is doing today probably more work in the line of producing new fruits than all the rest of us put together. And, gentlemen, if any of you should be in that section of the country, you ought to take the time to go over his plantation and see the different things of interest he has there. You would hardly believe it, but I want you, if possible, if you ever pass through that part of the state, to go to his place and see for yourselves what he has, and you will find that I do not exaggerate. It does seem to me that when the states of Minnesota, Iowa and Wisconsin lock their arms together on this matter, on a meritorious object like this, we can do something. I sincerely hope so, and I hope these committees will be instructed by the executive committees of our three state societies so that something may be done in this direction. I trust each society will give its committee full power to act in this mater. Our means are a little short, but I believe our state society will be glad to do what it can.

Our state society meets next week, beginning on Tuesday morning, and I shall be glad to see some of these faces I see before me now

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with us at our meeting. If you come down there we will entertain you in the best manner possible and try to give you a treat. (Applause.)

The President: At this time I will take the opportunity of announcing the committee which is to be appointed to work some suitable testimonial and to look after in a general way this Patten matter. On that committee I will appoint Thomas E. Cashman, Clarence Wedge and S. D. Richardson.

The President: I will next call on Rev. C. S. Harrison for just a few words.

Rev. C. S. Harrison (Neb.): I am enthusiastic from the time I get here until the time I leave. I think there are the grandest set of men connected with this society that I ever met with in my life. (Applause.) The persistence of it! When you think of the persistence of these men, their untiring efforts in winning success and receiving no direct benefit, doing it all for the welfare of their country and for the grand state of Minnesota, there is an absolute inspiration about it. And when I think of those men who have passed over into the beyond and the influence they have left behind them, that alone is an inspiration that should keep up our courage and lead us to continue our efforts.

I am looking forward to the meeting of the National Peony Association. I want the whole Northwest here together at that time. You have succeeded grandly and gloriously with all kinds of fruits, you have made a truly wonderful success in that direction, and now I want you to turn your attention to flowers. Remember that! (Applause.)

The President: Now I am going to call on Mr. Philips for that speech of Mr. Gardner's. (Laughter.)

Mr. A. J. Philips, (Wis.): I have a speech of my own. My speech will sound flat and commonplace after listening to my friend Harrison. I have attended these meetings since 1870 and have always had a good time. What Gardner said reminded me of the man who told a pretty big story to an audience one night. There was a newspaper man there who rather doubted the truth of it, but the man said, "That is just as true as anything I have told you tonight," and that story that Gardner told you is just as true as anything else he told.

They have been hectoring me all of the time because my wife was with me. She knows me about as well as anybody. She has lived with me for forty-seven years, and she ought to know me as well as Gardner does. That reminds me of one of Governor Hoard's stories. He was in a Canadian town at one time and was introduced by the chairman of the meeting at which he was to speak. The chairman introduced him in a very flattering manner.

He said, "Ladies and gentlemen, this is Governor Hoard of Wisconsin. He is one of the best men in the country, and I am sure it will be a pleasure to all of us to listen to so distinguished a gentleman."

Hoard got up and said, "My friends in Wisconsin would be surprised to hear such a statement as that made by the chairman, and I

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am sure that my wife would be delighted to hear all the nice things said about me."

Just then an old Scotchman got up in the far rear of the room and said in the broadest dialect, " Aye, mon, perhaps she ken ye better!" (Laughter.)

We have had a good meeting and that means that it has given me pleasure, and I have had a good time. I want to tell you that this has been a great year; there never was a time when the country was in better condition than it is just at this moment. You have a great institution over here at the experiment station and certainly there is no state university that is better. You turn out young men and women that not only make their way in the Northwest, but they are heard from all over the United States. Look at the young men that came up here yesterday! Many of you will live to see those young men make their mark, not only in the Northwest, but the entire country will hear from them. Over there they are not only teaching the boys and girls horticulture and forestry, but they are teaching them how to live better lives. There never was a time in the world of greater advancement and greater progress along the line of right living than there is today. I asked my wife which was the best speech at the banquet the other night; she said the best speech was made by that lawyer. She enjoyed that. Gardner is a good fellow. He is not half as mean as he appears to be when you meet him on the street. Anyway I like him.

The President: I don't think Mr. Gardner had such a bad speech (laughter). Now, I am going to call on Prof. Hansen, whom we are always delighted to have with us.

Prof. N. E. Hansen (S. D.): Mr. President and friends: Of all the good things that have been said at this meeting, just one thought comes to my mind, and it takes me back a thousand years to the faith of my forefathers. Many believe in Thor and Odin, the gods who were supposed to rule the Northland in the old. Thor was the god who was fighting the forces of evil all his life, he was fighting the Frost Giants, that was his main occupation, keeping them subdued, and when the gods became old they would eat apples and that would make them young again. The descendants of those gods of the far north developed a mighty race and spread over the world. They held England four hundred years and helped to make it what it is now, one of the greatest nations on earth. Part of them are in the Northwest at this time and are helping to do battle against the Frost Giant. The spirit of Thor still lives, and we can take inspiration from these gods in the Northland. You remember they had a good time, and when they died they appeared before the god of Volhalla, where they did nothing but fight all day and went to a banquet and drank all night, and in the morning they were ready to fight again. I am not going to advocate that method of fighting the Frost Giant in the Northwest, but we should take the example of the gods and keep at it everlastingly. (Applause).

The President: I am now going to call on Miss Cairns, of Wisconsin.

Miss Gertrude Cairns (Wis.): I suppose Prof. Green thought if he would call on me I would say something complimentary of this pro-

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gram, but I think I shall have to disappoint him. I did not enjoy the banquet as much as I did some of the others. (Miss Cairns was on the banquet program, Sec'y). I had a friend who invited me up here while I was attending these meetings, and I am very much afraid she will not do it again, because she has seen very little of me. In fact one of my friends concluded that the only way to see anything of me was to become a member of the horticultural society herself, and she is now a full fledged member. I have only missed a part of the meetings, and I felt sorry to miss even a small portion. There must be something attractive about the meetings of this society when they force one to forego the pleasure of spending the time in company with one's friends that have asked one to visit them.

The President: We are glad to have Mrs. Stager with us again this year. She has missed very few of our meetings, and we shall be glad to hear just a word from her.

Mrs. Jennie Stager: I sat at home on Tuesday evening and thought of the meeting that was going on here, and I longed to see you all, and all at once I made up my mind that night that I would come. I did come, and I am glad I did, and I have enjoyed every minute since I have been here. I have learned more at this meeting than I believe I have ever learned before, and I have enjoyed myself to the utmost. It has done me so much good, and I shall go home and think all the rest of the winter of the good things I heard here.

The President: I see Mr. Owen is in the room, and I am going to call upon him for a few words.

Hon. S. M. Owen: I am not a horticulturist, why do you call on me? My foreman always comes to me and says. "I want a two or three line note to fill out a column." I would a good deal rather have him ask me to write a half column. I hardly know what to say to you in two minutes, when I could not begin to express my estimation of this meeting and its membership and this society and its membership if I should take two hours to do it instead of two minutes. (Applause.) When I was a boy at school and even after that, from my school geographies and other source of information I got the impression that Minnesota was pretty near the North Pole, and if I wanted to hunt for a long keeping icicle all I had to do was to come to Minnesota to find icicles at any season of the year. The idea of growing fruit in this country was regarded as a huge joke. Even forty years ago that was the story told in Ohio and that region, and I learned a few days ago to my great delight that Minnesota apples had been shipped to Ohio and Indiana this fall. I was not only glad of it, but it raised this society and this state in my estimation to think that such a thing was possible.

As I got that information, I thought of the beginning of this society away back forty years ago, and I thought of the magnificent spirit of persistence and devotion that has actuated this society for many years, and especially in that connection did I think of those who had gone beyond, as Mr. Harrison spoke of. Although these friends are dead, we still feel their influence and their inspiration, and the very fact that you are shipping apples to the East to the people who despised

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this country as a fruit growing country and who have done so down to the present time, is a result due to you people here and those who have gone before you.

And now in conclusion all that I can say is that I wish sincerely that during the coming year flowers may strew your paths wherever you go, that their sweetest perfume may cheer you in abundance, and that apples may cheer your senses and enlarge your purses. I trust you may all come here again a year hence bringing to this meeting drops of your experience and histories of your success during the year. I trust that you may not only have this meeting duplicated but that it may be exceeded in interest and value if such a thing is possible, and last of all I pray most sincerely that you may have no occasion for a Memorial Hour when we meet here again, but that you all, from the greatest to the least, may come here to meet friends and exchange experiences, and have as enjoyable and profitable time as you have been having this week. I thank you. (Applause.)

The President: I am going to call on Mr. Wyman Elliot.

Mr. Wyman Elliot: Mr. President, Friends and Fellow Members: I scarcely know what to say. The lessons I have learned here at this meeting have taught me that aid and intelligence may be extended and that new things may be brought out. I have learned more at this meeting than I have ever learned at any one meeting before. I hope it is the same with the rest of you. While I have heard but very few of the papers that have been read, I did hear some of the discussions. I have been learning below of things that have been of interest to me and that I hope in future will be of value to you. I want to speak of the exhibit of grafted fruit. I have never seen such a seedling exhibit as we have in the fruit room at this time. The seedling exhibit from Iowa, made by Mr. Patten, is something wonderful. It has done me a world of good to see what that man has been doing, and I hope there may be a reward for him during the few years that he may be on earth, and I trust that he may have the strength and inclination to continue his great work to the end. We have but a few members of the "old band," as we call them, left, and each year they are dwindling away and going to the "great beyond." When Brother Harrison was talking, I was thinking of what Peter Gideon thought, that spirits were looking down upon us and were seeing what we were doing, and I thought if that was true, they would be glad to see what we have done this year. (Applause.)

The President: Now I am going to call on Mr. S. D. Richardson; he is another old standby.

Mr. S. D. Richardson: I do not happen to be one of the early members of the society, although I was in Minnesota at an early date. I have, however, been a member for the last fourteen years. The oldest members, the best we had, they are nearly all gone, but I am glad there is a younger element coming on to take their place. It is the young ones that have got to go ahead and carry on this horticultural work. The old members will soon be counted out; their day is almost done. But it is the young that are going to do a great deal better than

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we have done. They have a better chance than we had; their opportunities for acquiring an education are better, and in these days it is education that counts in all lines of work. The pioneers of the west came here when the state was young—they had to rough it and bear all of the hardships, but their children have no such task before them, and they are in a position to do better work than we have done. I thank you. (Applause.)

The President: I am now going to call on Mr. T. E. Perkins, one of our members whom we have made a life member.

Mr. T. E. Perkins: Mr. President and Fellow Members: I do not know that I can say anything more than to thank you for the honor you have conferred upon me to day. (Applause.)

The President: Mr. Perkins is a man of deeds and not words. He does not talk as much as we would like to have him. He has got a "good thing" all right. Next I am going to call upon our good friend, Capt. Reed.

Capt. A. H. Reed: I shall take the two minutes in thanking this association for the honor they have conferred upon me by electing me a life member, for I do consider it one of the greatest honors that could come to me, and my only regret is that I have not done more for the association to deserve that honor, but it will give me new enthusiasm to work, and I shall continue to work in the interests of the association—and I must say that I enjoy the work of horticulture. It is that which leads me to come here every year and to take part with you. And not only is that a pleasure, but it is a pleasure to meet here with those people that I have known for years and to make new acquaintances among the members and the friends that come here from other states. Our membership at the present time is about twenty-five hundred, and why can not we take hold and make it five thousand or even ten thousand. If Secretary Latham had the help that we ought to give him, I think we could reach that figure in two or three years. (Applause.)

The President: I am now going to call on the President of the Woman's Auxiliary, Miss White.

Miss Emma V. White: I would rather be seen than heard. I suppose I am called upon to say something because I am at the head of the Woman's Auxiliary, that portion of our membership that is working more especially for the ornamental in horticulture. I want to thank you for the very nice audience you gave us the afternoon of our program and for the interest shown in it. I am interested in this association although I am not a fruit grower, for any one, even though not actively engaged in the work, must be impressed by the enthusisam and earnestness shown in all your sessions. (Applause.)

The President: Next I am going to call on our good old friend, Seth Kenney.

Mr. Seth Kenney: I have had the pleasure of being a member of this society for twenty-eight years, and every year that the time of meeting rolls around I feel that I cannot stay away, and I always feel that if we want to be truly great men we should belong to the horticultural society. (Applause.)

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The President: We are always going to bear that in mind. Mr. Wilwerding is here and I am going to call on him for a few words. I want to introduce Mr. Wilwerding to you as a man of perhaps few words, but he is a man who does things.

Mr. Anton Wilwerding: Mr. President and Friends: This is a genuine surprise to me. I am not accustomed to speaking, and to be called upon so unexpectedly I scarcely know what to say. If I had known that I would be called upon I might have prepared something to say. One thing I can say, and that is that I shall take home and endeavor to put into practice the things that I have learned here, and I trust that by another year the results may be apparent. Your motto is, "By their fruits ye shall know them," and when we place our fruits on exhibition here it should serve as an evidence here that we have profited by what we have learned at these meetings. I thank you for this opportunity of saying these few words to you. (Applause.)

The President: Now Mr. Cook, we want you to speak to us just two minutes.

Mr. Dewain Cook: I have been with you for many years. There is one thing that impresses me at these meetings and that is the intelligence that the officers and members of this society display in conducting their work. We are storming the fortress of nature, and we are going to get there. When I first went into fruit growing, the people said I was a little cranky, I was a little out of my head, but we have demonstrated that we can grow fruit, and those who think we cannot are in a hopeless minority. There is one thing we are after, and that is a winter apple. A good many say we cannot get a winter apple, but we are going to get it, and we are going to get everything else we are after. We are going to get things that will surpass the wildest dreams of the most enthusiastic horticulturist, and they are not going to be very long in coming. (Applause.)

The President: I am going to call next upon Mr. Jayne, who has given us such delightful music. We don't know whether he can make a speech; we know he can sing, but no music this time. (Applause.)

Mr. Trafford Jayne: I am indeed as much surprised as my friend in the rear at being called upon for a speech because I did not think I was expected to furnish anything but music. I am really interested in the horticulturist society, and Mr. Latham has given me much information in regard to your work. I never saw so many pretty apples together in all my life, and I am sure the society is to be congratulated on having its membership composed of men and women of such remarkable intelligence and sound common sense. You are doers of things and speakers also. It reminds me of a little story.

There are some people who talk about doing things, but when they get right up against a proposition they are apt to be not there. They are like the German brother who was in California during the early times when they acquired wealth very rapidly. A colony went out there and soon became very prosperous. At one time they had a big banquet, and they were going to have everything that anybody could wish for. They were rather clannish and did not associate much with other peo-

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ple, but in one part of the city they had a great many poor people who had a hard struggle to get along in life.

At this banquet where they had everything to eat and drink in the greatest profusion, one man got up and said: "Meester Tschairman and Chentlemen, Vile we wos setting here mit all des bonties of natcher aboud us, I was also tinking of de poor pipple we haf among us. De wimmin do not haf enuf food to feed chillen, de men do not make enuf to feed and close deir famlis, der yungens grying for bred, vile we are setting her und enchoying ourselfs mit the best the earth kin afford, und I moof you that ve here und now gid up from dis dable und make tree cheers for de poor." (Laughter and applause.)

The President: Now we want to hear from Mr. Patten.

Mr. C. G. Patton (Iowa): I have been so much in evidence before this audience that I simply want to say that I deeply appreciate the expression of good will and the courtesy that has been shown me while here and thank you for it. That is all I have to say. (Applause.)

The President: I see Prof. Washburn is here, and we are not going to let him off without a two minutes' talk.

Prof. F. L. Washburn: Now, Mr. President I just want to say a word. I was here when Mr. Nordine spoke of professors. I did not show any embarrassment, and that reminds me of the story of some poor men who were riding on the railroad in England. They had to go a distance of about fifty miles, and they bought return tickets. When they got into the coach they put their tickets into their hats and one man went to sleep. One of the other three men who was quite a wag took the ticket out of the man's hat and put it into his pocket.

Then he woke him up and said: "The guard will soon be here, and you had better get your ticket ready."

The man took off his hat to get his ticket and said: "By George, I've lost my ticket, and I have no money either. Some of you fellows will have to let me have enough money to pay my fare."

They all told him they had no money. The wag suggested this to him. "There is only one thing you can do, and you have got to do it quick. Get under the seat here, and I will put the blanket down so the guard cannot see you."

The man rather demurred at this because he was of quite a dignified appearance, but he saw no other way out of the dilemma and finally consented to follow the suggestion.

When the guard came around the wag handed him four tickets, and the guard said: "Why do you give me four tickets when there are only three men."

"O," said the wag, "The fourth man is under the seat, he prefers to ride that way." (Great laughter and applause.)

The President: Now I am going to call upon one of our faithful members who is with us every year, Mr. J. F. Benjamin.

Mr. J. F. Benjamin: This is quite a surprise to me, but I happened to miss my train, and I concluded to stay over until the close of the meeting. If you had another professor to call upon, perhaps by the time he got through I would have my little speech ready. I am sure

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I have not missed anything by missing my train. I have very greatly enjoyed the sessions of this horticultural meeting. I am sure no one if he lives to be a hundred years old will ever regret the time and money spent in coming here to these meetings.

The President: We have run over the hour, but there is a chance for still a few more talks, and if there is any one here who has anything to say, we will be glad to hear from him.

Mr. Huestis: I am a neighbor of Prof. Washburn's at the lake. I have been a horticulturist for fifty-two years. I have been confined in an office for twenty-six years, and I felt the need of getting out of it and getting near to the soil. I am glad to say that I have got a lot and a few trees, and I have made arrangements with Prof. Washburn to take care of my apple trees and a few other things, and keep off the bugs. I thought as long as he had to take care of his own, he would as soon take care of mine. (Laughter and applause.)

The President: Yes, that is natural; he will take care of the bugs.

Mr. Clausen: I feel like saying a good deal but shall refrain at this time. At the first horticultural meeting I ever attended, I remember one of the members read a paper in which he said that the Lord was a horticulturist. I shall never forget that, because it has been a great help to me. He said he planted the Garden of Eden, and we all know if the Lord planted it it was well planted. The Lord instructed the people to cultivate and protect the garden, and whether they did it at that time or not does not concern us, but we have evidence in the fruit room below the injunction was heeded by later descendants, and if we always follow his advice to cultivate and protect we shall be all right. I thank you. (Applause.)

Mr. Cowles: I feel it is a great honor to be a member of this society. I always learn a great many things at these meetings, and I have learned a number of things at this meeting that I shall put into practice when I get home. I hope I shall be in a position hereafter to do more for the society than I have ever done before.

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Memorial Hour.

IN MEMORIAM, DAVID SECOR.

Mr. President and Fellow Members of the Horticultural Society:

I was personally acquainted with but two members that have been mentioned here as having passed away during the year. I do not know that I ever met Mr. Westman or Mrs. Van Cleve, but I was well acquainted with Mr. Secor, having been a resident of the same town with him for twenty years. We were both horticulturists, a little cranky perhaps, but we got along first rate together.

Mr. Secor was born in the state of New York in 1836, and died September 14, 1907. At the age of twenty years he came west to Iowa, and four years later settled in Forest City, Iowa, which was his reesidence for a great many years. He was married in 1862, and two years later he went to war as a member of the Second Iowa infantry, and started with Sherman on his march to the sea. However, he was compelled to stop at Macon, Georgia, on account of sickness. He represented his district in the legislature for a number of years, and he and his family were quite prominent in society. He was a man always in earnest and had the confidence of the community in which he lived and always took part in public affairs. In 1886 he came to Winnebago City. He was a mason by trade. He bought a lot in Winnebago City and built a bank, and he was located there over sixteen years. He was always a practical man, and he put up the building himself, and it stands there today as an evidence of his workmanship. He put on overalls and helped build his bank, and later he built a house and he helped to do the mason work. He was an enthusiastic horticulturist, although he was a man who conducted a great many things. In Winnebago he had something to do with a business college, he was a member of the board for a good many years, he was president of the board of education, president of the council, and he had the confidence of the community wherever he lived. He was also a member of the G. A. R. He was a man whom people honored and trusted, and when he met financial reverses in later years, perhaps through no fault of his own, he still retained the confidence of the community, and when the bank was reorganized later they elected him president. He did not serve long, however, because he was broken down in health and could not serve on that account, and he did not have good health from that time until he died.

Mr. Secor was a cheerful man, and his face was always lit up with a smile when he met his friends. No one ever met him with a sad face, but he was always cheerful, and I don't think I ever heard him grumble about the weather during all the time I knew him. That is an example some of the rest of us might follow without any harm to ourselves. I remember those two things: He always had a cheerful face and never grumbled about the weather. There is one difference between Mr. Secor and Mr. Yahnke. Mr. Yahnke left somebody to carry on his work, but Mr. Secor was situated like some of the rest of us in that respect: when we leave there is nobody to take up the

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work and carry it on, only as our influence is felt by others—and especially will it be carried on by the membership of this society. We are apt to think what a great many years we have in this world, and before we know it we are done. I am glad when men and women live to a good old age, and when the time comes to die they can look back upon their lives and know they have done some good. Ever since the world has been created men go through their course in life and then pass away. It will be so as long as the world stands, and it is well that it is so. It is a good thing for the friends that have passed over and left an influence for good behind them, and it is sad to think of those that pass over whose influence has been bad. The person who does right gets his pay here. No matter what about the hereafter, the man who does right enjoys life here and gets something out of life, has a great reward while he is here on earth. We cannot get much enjoyment out of life when we think of nobody but ourselves; then we have a hard time in life.

Mr. Secor was carried to his last resting place by the boys of the James K. Ball Post at Winnebago, and his remains were taken to his old home at Forest City, Iowa. He will be long remembered in Winnebago City by all who knew him. We are glad he lived among us. Some of the members of this society were well acquainted with him and met him a number of times, and they will remember that he was always a kind and cheery man, with a great love for horticulture and that the influence of his whole life was good.

S. D. RICHARDSON.

IN MEMORIAM, FRANK YAHNKE.

Mr. President and Fellow Members:

In responding to the invitation of your secretary to assist for a few moments in the services of the hour set apart to speak of our departed ones, I am here to say a few words of admiration for our fellow worker and departed member, Frank Yahnke, of Winona. I appreciate this and feel it an honor to be called upon to speak of so good a man, but at the same time I feel my inability to do the subject justice. Our secretary prepared such a lengthy, able and complete memorial article in the April number of the Horticulturalist regarding Brother Yahnke that little remains for me to say. Still I think of him so often that it is an easy task to speak of him and his work. Every morning when I look out of my window I see a beautiful Yahnke tree that he gave me, and every time I look at those front seats where he used to sit during our sessions, my thoughts go back to him.

My first real acquaintance with Mr. Yahnke was when coming to the annual meeting of this society in 1898, I rode on the train from Winona to this place with him. He gave me an interesting account of his early history, and he gave so much credit to our former member, Mr. J. C. Plumb, of Milton, Wis., for shaping and influencing his Christian life and character, that after Mr. Plumb's death I asked that Mr. Yahnke be sent as a delegate to the Wisconsin society, and

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as secretary of that society I invited him to speak of Mr. Plumb at his memorial service. He surprised our people and endeared himself to Mr. Plumb's family by the eloquent and well prepared eulogy he gave. He spoke with so much feeling of Mr. Plumb's kindness to him when he was a mere boy in a strange country. How he not only taught him the business of horticulture but took him into his family circle, took him to his church and Sunday school and assisted him to lay the foundation for the Christian life he has since lived. In writing my book, to please Mr. Yahnke, I intended to have Mr. Plumb's picture on the same page with his, but I failed to receive Mr. Plumb's picture in time.

It was my good fortune to spend over a month during the last three years with Mr. Yahnke, attending institutes and horticultural meetings, and at his home, and it was an enjoyable treat, I can assure you. He gave himself without reserve to help others, which was evidenced in his institute, his horticultural and his Sunday school work. Friends, think of his sixteen years of unselfish, earnest work in that Sunday school without money and without price, talking to an aggregate of over 30,000 children at different times, urging them to lay the foundation for Christian lives. I attended his school several times and, though I could not understand his German prayer, I felt that it had the sound of sincerity in it.

I visited him once at the hospital in Winona last winter. He thought then he was better; he seemed to be perfectly resigned and said, "Every one is so kind to me." He asked all about the last meeting in Minneapolis and about the members. He said, "Philips, if you will stay two days I will be well enough to go home, and you can go with me." I intended to stop on my way home from the dairy convention at Owatonna, but when I talked with him over the phone I promised him I would come to see him as soon as I returned from a trip to northern Wisconsin. It was while there the sad intelligence of his death reached me, and that talk over the phone was the last time I heard his pleasant voice. I could not reach home in time to attend his funeral. As Mr. Latham said, it was his wish that his family should keep up his Sunday mission school that he took so much pleasure with. On my way to this meeting I spent Sunday with his family and attended this school. The old time chart and the motto on the blackboard are still there, with his son and daughter teaching classes, one daughter presiding at the organ and the youngest in one of the classes. The school was opened by all repeating the Lord's Prayer and the entire school singing several appropriate hymns. Then followed the Dec. 1st lesson, the death of Sampson, all this, with the memory of our departed brother in my mind, made a fitting addition to this memorial service.

I believe Mr. Yahnke in his religious life and horticultural work will be linked with the best men of this state. Mr. Yahnke needs no monument of brick or marble to perpetuate his memory. He has more fitting monuments, the love and veneration of those whose lives he has benefited and brightened, who will rise and revere his name.

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No doubt many, myself included, will feel that we did not do enough to show him how we appreciated his work while he was a co-laborer with us. In this I am forcibly reminded of the little couplet which reads:

" 'Tis better to send this very day
To a living friend a cheap bouquet,
Than a bushel of roses, white and red,
Placed on his coffin when he is dead."

I carried to him a bouquet that Mr. Cashman kindly sent after our last winter's meeting, and how he seemed to enjoy looking at it from his sick bed! He said it reminded him of our meetings.

He loved his home, and it was a happy one, and they loved him. I consider him to be one of the rare men who had the power and disposition to bring heaven down to earth for a while at least. I feel that there are but few men that could gain the confidence, esteem and respect of his associates as he did in the few years he was identified with this society. He loved the work and labored faithfully for its advancement without thought of personal gain. He was a most unselfish man. His religion was not only a profession, it was a part of his life. He labored for humanity. The world today has great need of such characters, and for that reason we who are assembled at this memorial service sorrow for his departure so long before he had lived his allotted time.

In my close friendship with him I can think of nothing he said or did that I have any desire to forget. He had few critics. He once attended one of our Wisconsin institutes. I introduced him to the workers and to my friends. He spoke several times; all were pleased to hear him.

After it was over a prominent man said to me, "Where did you find that man?"—as was said by our society of Prof. Goff.

Mr. Yahnke was a man ever directed by Christian kindness in his intercourse with men. I cannot close this memorial talk in a more fitting way than to copy some lines dedicated to a well known horticulturalist by a friend.

"I cannot say, and I will not say,
That he is dead. He is just away!
With his cheery smile and a wave of his hand
He has wandered into an unknown land,
And left us dreaming how very fair
It needs must be since he lingers there.
And you, oh, you who wildest yearn
For the old time step and the glad return,
Think of him faring on as dear
In the love of there as in the love of here—
Think of him still as the same, I say.
He is not dead, he is just away!"

—A. J. Philips.

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PROGRAM 42d ANNUAL MEETING

Minnesota State Horticultural Society

Held in Minneapolis

Dec. 1, 2, 3 and 4, 1908.

Place of Meeting.

The annual meeting is to occupy the same accommodations in the First Unitarian Church, corner Eighth St. and Mary Place, that have been used now so acceptably for a number of years, the society meeting in the audience room, the fruit exhibit being displayed in the large basement room immediately beneath, with a roomy cloak room situated immediately between the two. There are also in the building convenient committee rooms and a room especially well suited for the uses of the various auxiliary societies. The acoustic properties of the audience room are especially good, which fact, together with the method of seating, commends it as an entirely suitable place for our purpose.

Fruit Exhibit.

A fine fruit exhibit is assured, and we believe about the usual proportion of the display will be seedling apples. Competition in seedling apples is open as heretofore to western Wisconsin, northern Iowa, North and South Dakota and Manitoba. Every member should be sure to bring something as a contribution to this fruit display, which should certainly exceed one thousand plates, that being the approximate amount of display for the last two or three years. See increased premiums on last pages of this program, noting especially the new ones for "pecks of apples" and "bushel boxes of apples."

Program.

Look at the program and you will have some idea of the feast in store for you. None we have ever issued has contained a greater diversity of topics interspersed with unusual features of special interest. Don't miss the first session on Tuesday morning nor the last session on Friday afternoon, both of which contain material of unusual value. Neither do you want to miss any session that lies between these two, nor the annual banquet on Wednesday evening, the crowning event of the meeting.

Extend Invitation.

Don't forget to invite your friends to this meeting. Neither forget the wife, who will enjoy an outing and meeting of this kind as well or better than you—nor the son or daughter who is to follow you in this cherished work.

HOTEL MAJESTIC IS SOCIETY HEADQUARTERS.

This concrete, three story hotel—the pleasant gathering place of our members last year—is situated on the corner of Hennepin Ave. and Seventh St., with entrance on Seventh St. side, and only two blocks from our place of meeting. There is a cafe in the building and plenty of other restaurants close by on Hennepin Ave. Rates of $1.00 per day, per room, one in a room; or $1.25 for two in a room, have been secured. Room with bath $1.25, two in a room $2.00. Every room is provided with hot and cold water, telephone, etc.

A double room is provided on the second floor as headquarters of the society, to be used by the members for social purposes. It would be well for members to address the hotel directly and make reservation of rooms as long a time beforehand as possible, to make sure of accommodations—always stating when you will arrive and depart.

Minnesota State Bee-Keepers' Society

Will hold its third annual meeting in a room adjoining that occupied by the Horticultural Society on Wednesday afternoon and Thursday, Dec. 2 and 3, 1908.

RAILROAD RATES.

There are no special rates, but a regular rate of two cents per mile instead, so that the exact railroad expense can be figured beforehand.

For further information address A. W. Latham, Sec'y, 207 Kasota Blk., Minneapolis.

INSTRUCTION IN GRAFTING.

Each day of the meeting, from 1:00 to 2:00 o'clock P. M., the art of grafting will be taught to any applicant, using actual scions, roots, raffia, wax, etc., and the applicant will be shown how to make and complete a graft—which he may take away with him. Either Mr. LeRoy Cady or Mr. A. R. Kohler, both assistants in the horticultural department of the State Experiment Station, will conduct this exercise in the Fruit Room at the annual meeting. Look for the large sign "GRAFTING."

NOTICE:—A bell will be rung in the Fruit Room five minutes before the exercises begin in the Audience Room.

A TEN MINUTE LIMIT.

On account of the fullness of the program and to allow plenty of time for discussion, those presenting topics are requested to limit themselves to ten minutes, or 1,000 words, except as noted.

TUESDAY MORNING SESSION.

9:30 o'clock.

Every member attending should not fail to be in his seat promptly when this sessions opens.

Organ Solo, ending at 9:30 o'clock.....
Invocation.....Rev. C. S. Harrison, York, Nebr.
Song.....Mr. Trafford N. Jayne, Minneapolis

Program.

1. The Bull Pine and Its By-Products.
   C. S. Harrison, York, Nebr.
2. Small Fruit Culture in the Pine Regions of Minnesota.
   A. B. Coleman, Bennettville.
3. How to Grow Blackberries with Success in Minnesota.
   Gust Johnson, Excelsior.
4. The Homer Cherry Record in Southeast Minnesota.
   Walter A. Yahnke, Winona.
5. The Unusual in Garden Vegetables and Their Uses.
   J. Vincent Bailey, Newport.
6. Glass as an Adjunct to Vegetable Gardening.
   F. H. Gibbs, St. Anthony Park.

Appointment of committees on credentials, president's address, etc.

N. B. Speak of the Grafting Demonstration.

Announce exercise in "evergreens" at 1:30 P. M.

This session will close promptly at 11:45 A. M.

All annual memberships expire on the first day of the annual meeting. Renew and become a member by paying the Secretary $1.00.

TUESDAY AFTERNOON SESSION.

1:30 o'clock.

A question exercise on the general subject of **"Evergreens"** will be conducted by Clarence Wedge, of Albert Lea. Small specimens of a number of varieties of evergreens will be exhibited and talked about as occasion offers. Don't miss this chance to draw from Mr. Wedge's long experience along this line.

2:00 o'clock.

President in the Chair.

Reception of Delegates.

Program.

1. The Canadian Fruit Marks Act and Its Lesson for Us.
   S. M. Owen, Minneapolis.
2. Uniformity in Fruit Package.
   R. A. Wright, Excelsior.

3:15 P. M.

Minnesota Rose Society.

Mrs. D. W. C. Ruff, President, in the chair.

1. Out-Door Roses and How to Grow Them.
   E. Meyer, Minneapolis.
2. Bulbs for Fall Planting.
   E. A. Smith, Lake City.
3. Dahlias for Every Garden.
   D. W. C. Ruff, St. Paul.
4. The Gardening of Perennials in Manitoba.
   Dr. H. M. Speechly (Delegate Western Hort. Society), Pilot Mounds, Man.
5. A Practical Garden Dress—It will be worn by the speaker.
   Mrs. Henry A. Boardman, St. Paul.

The Rose Society will hold its annual business session in an adjoining room immediately following adjournment.

Pres. Green in the chair.

Appointment of committees on award of premiums, obituaries and final resolutions.

Announce Question Exercise at 9:00 o'clock Wednesday morning.

4:30 P. M.

Two Short Lantern Talks.

Possibilities of Cranberry Culture in Minnesota—with illustrations.
Dr. H. J. Franklin, Asst. to State Entomologist.

To be followed by "Minnesota Forests and Gardens on the Screen."
Prof. S. B. Green, St. Anthony Park.

WEDNESDAY MORNING SESSION.

9:00 o'clock.

Prof. Saml. B. Green will conduct a question exercise on **"Growing New Fruits.** Do you want to know more about this live subject? Here's your chance!

9:30 o'clock.

Plant Breeders' Auxiliary.

(Wear the Button.)

J. M. Underwood, President, in the chair.

1. A Year with the Plant Breeders' of Minnesota.
   Clarence Wedge, Albert Lea.
2. State Fruit Breeding Farm in 1908.
   Chas. Haralson, Supt., Excelsior.
   Report on Same.
   Clarence Wedge, Albert Lea.
3. Crossing the Native and Japanese Plums.
   O. W. Moore, Spring Valley.
4. My Seedling Fruits.
   Jas. Arrowood, Nevis.
5. Peonies from Seed.
   O. F. Brand, Faribault.
6. Growing Seedling Apples for the Prize Contest.
   J. M. Underwood, Lake City.

11:00 o'clock.

Minnesota State Bee-Keepers' Society.

Pres. Scott LaMont in the chair.

1. The Fascination of Amateur Bee-Keeping.
   Rev. J. Kimball, Duluth.
2. Foul Brood a Menace to Bee-Keeping.
   Wm. Russell, State Bee Inspector, Minneapolis.

Discussion to be opened by Prof. F. L. Washburn, State Entomologist.

Note special features of afternoon session.

You can become a life member by payment of $10.00, in two annual payments of $5.00 each if you prefer. This will entitle you to a file of our bound reports, a library in itself.

WEDNESDAY AFTERNOON SESSION.

1:30 o'clock.

Demonstration and Question Exercise on **"Soils Adapted to Fruits and the Maintenance of their Fertility"**—an exercise conducted by Prof. Harry Snyder, of the State Agricultural College. A rare opportunity. Be prompt!

President in the Chair.

2:00 o'clock.

Program.

1. Some Suggestions for the Strawberry Grower.
   C. L. Richardson (Delegate from Wisconsin Society), Chippewa Falls, Wis.
2. The Improvement of Garden Seeds.
   G. D. Black (Delegate N. E. Ia. Hort. Society), Independence, Ia.
3. Drainage at the State Fruit-Breeding Farm and the Principles Involved.
   Prof. John T. Stewart, St. Anthony Park.

2:45 o'clock.

Woman's Auxiliary.

Miss Emma V. White, President, in the chair.

1. Distributing Apple Trees via the Woman's Club.
   Mrs. Edgar H. Leyhed, Faribault.
2. Johnnie Appleseed.
   E. F. Pabody, Minneapolis.
3. A Woman in the Vegetable Garden.
   Mrs. D. W. C. Ruff, White Bear.
4. The Public Square in the Prairie Village.
   F. Nussbaumer, Supt. Parks, St. Paul.
5. A Fourth Season in Improvement Work.
   Mrs. Anna B. Underwood, Lake City.

Announce business meeting of the Woman's Auxiliary.

4:30 o'clock.

"Our Duty toward the Landscape," an illustrated talk.
M. O. Nelson, Park Commissioner, Minneapolis.

The title indicates plainly the purpose of the speaker to interest his hearers in matters pertaining to the ornamental in horticulture out of doors—and he does it. Scores of beautiful views.

Following this lecture, at 6 o'clock we go in a body to the banqueting hall.

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THURSDAY MORNING SESSION.

9:00 o'clock.

Question and answer exercise on **"Strawberries"**—conducted by Geo. J. Kellogg, of Janesville, Wis. Fire in the questions and get the most possible out of this veteran of a half century in this work.

President in the Chair.

9:30 o'clock.—Annual Reports.

This is not to be a dry session, as the reports will be short, oral and pithily discussed.

Report of Executive Board, Wyman Elliot.
Report of Secretary, A. W. Latham.
Report of Treasurer, Geo. W. Strand.

The annual reports here following will be filed for publication without reading, but each officer will be allotted two minutes when presenting his report in which to make oral statement as to features of special interest in connection with the substance of his report.

Reports of Vice-Presidents.

First Cong. District, S. H. Drum.....Waseca
Second Cong. District, John Bisbee.....Madelia
Third Cong. District, C. H. Andrews...Faribault
Fourth Cong. District, F. F. Farrar..White Bear
Fifth Cong. District, Thos. Redpath....Wayzata
Sixth Cong. District, Anton Wilwerding.Freeport
Seventh Cong. District, C. C. Selvig....Willmar
Eighth Cong. District, S. P. Crosby.....Braham
Ninth Cong. Dis., Prof. W. Robertson..Crookston

Reports of Superintendents of Trial Stations.

Prof. S. B. Green, State Experiment Station; Thos. E. Cashman, Owatonna; Dewain Cook, Windom; A. B. Lyman, Excelsior; F. I. Harris, La Crescent; L. R. Moyer, Montevideo; Mrs. Jennie Stager, Sauk Rapids; J. S. Parks, Pleasant Mounds; F. J. Cowles, West Concord; F. B. McLeran, Wrenshall; A. H. Reed, Glencoe; Rev. John B. Katzner, Collegeville; Seth. H. Kenney, Waterville.

Reports of Auxiliary Societies, viz.:

Minnesota State Bee-Keepers' Society.
Minnesota Rose Society.
Woman's Auxiliary.
Southern Minnesota Horticultural Society.
North Dakota Horticultural Society.
Kandiyohi County Horticultural Society.
Red River Valley Horticultural Society.
Minnesota State Forestry Association.
McLeod County Horticultural Society.
Rock County Horticultural Society.
Northeastern Minnesota Horticultural Society.

1. Report of Committee on Fruit List.

J. P. Andrews, G. W. Strand, T. E. Cashman.

2. Adoption of Fruit List.

THURSDAY AFTERNOON SESSION.

1:30 o'clock.

Exercise in **"Cross-Fertilization of Fruit Flowers."** Conducted by J. L. Ware, Assistant in Horticulture, State Experiment Station, using tools, models, etc. Instruction in this important feature of Plant Breeding will be given personally to all interested.

2:00 o'clock.

President in the Chair.

Program.

1. The Purpose and Process of Cross-Pollination.
   LeRoy Cady, St. Anthony Park.
2. President's Annual Address.
   Prof. S. B. Green.

2:30 o'clock.

Annual Election of Officers.

3:00 o'clock.

Minnesota State Forestry Association.

S. M. Owen, President, in the chair.

President's Address.
S. M. Owen, Minneapolis.

Fire Fighting in Our National Forests.
G. E. Marshall (Supervisor Cass Lake Reserve), Cass Lake.

Prairie Plantations.
Prof. J. P. Wentling, St. Anthony Park.

Four Short Talks by Students in Minnesota School of Forestry.

1. Summer Work at Itasca Park.
   Carl Hamilton.
2. Afforestation in the Nebraska Sand Hills.
   Clarence French.
3. In a Washington Lumber Camp.
   Raymond Orr.
4. In a Montana National Forest.
   Jas. Gilles.

Report of Secretary.
E. G. Cheyney, St. Anthony Park.

Election of Officers.

Announce special features of Friday morning session.

4:30 o'clock.

How to Raise More Fruit and Less Wood. An illustrated stereopticon talk.
H. A. Huston, Chicago, Ill.

Judging by a previous similar talk by Prof. Huston, this will be an occasion of rare interest.

FRIDAY MORNING SESSION.

9:00 o'clock.

Question Hour on **"Plums for General Cultivation."** Led by Mr. Dewain Cook, of Jeffers, our "plum expert."

Come prepared with a lot of questions to make this exercise of large practical value.

9:30 o'clock.

President in the Chair.

Orcharding.

1. Developing Commercial Orchards in Fillmore County.
   C. E. Snyder, Preston.
2. Orchard Notes from a Half-Century Standpoint.
   S. D. Richardson, Winnebago.

Nursery Topics.

1. Pruning in the Nursery.
   Henry Theibault (Foreman Clinton Falls Nursery), Owatonna.
2. The Distribution of Nursery Stock.
   C. W. Gurney (Delegate S. D. Hort. Society), Yankton, S. D.
3. Legal Protection for Grower and Planter.
   Wm. T. Coe, Attorney, Minneapolis.

Pruning—with Illustrations.

1. Pruning the Orchard—When, How and Why.
   Dewain Cook, Jeffers.
2. Pruning for Fruitfulness.
   A. D. Brown, Baraboo, Wis.
3. Pruning in Small Fruit Culture.
   E. B. Miller, Bloomington.
4. Pruning Shade and Ornamental Trees and Shrubbery. Illustrated.
   Theo. Wirth, Supt. Parks, Minneapolis.

Are you a member of the Plant Breeders' Auxiliary? If you are growing seedlings and are a member of the Horticultural Society you should join at once. No expense. Consult the secretary.

FRIDAY AFTERNOON SESSION.

1:30 o'clock.

A demonstration in "Spraying," by A. R. Kohler, Assistant in Horticultural Department, Minnesota State Experiment Station. A practical object lesson that no fruit grower in the society should miss.

2:00 o'clock.

President Green in the Chair.

TWO SYMPOSIUMS.

Spraying in the Orchard and Elsewhere.

1. Ten Years' Experience in Orchard Spraying.
   Carl G. Steller, Excelsior.
2. What Spraying Has Done for Me.
   H. H. Pond, Minneapolis.
3. Spraying by an Amateur.
   S. J. Walgren, Willmar.
4. Two Years in Spraying Experiment.
   Prof. F. L. Washburn, State Entomologist.
5. Arsenate of Soda as a Fungicide—An object lesson in making spraying mixtures.
   A. Brackett, Excelsior.

Top-Working in the Commercial Orchard.

1. Top-Working Notes from a Long Experience.
   A. J. Phillips, West Salem, Wis.
2. A Ten Years' Experiment in Top-Working.
   F. W. Kimball, Austin.

3:30 P. M.

Closing exercises.

Report of committees on obituaries and on final resolutions.

Two-minute speeches by members.
Closing song by Trafford N. Jayne, Minneapolis.

4:00 P. M.

Closing remarks by the president.
Adjournment.

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CHINKING.

The following subjects will be called up at any point in the program where opportunity offers. Experience shows that there will be such openings, when we may expect to hear from these friends. But to be sure of getting this you must be on hand both early and late.

1. Is the Apple Industry in the United States on the Decline?
   Hon. G. B. Brackett, Pomologist, Washington, D. C. (To be read by the secretary.)
2. Economic Value of the Norway Poplar.
   Emil Sahler, Waseca.
3. Odds and Ends of Horticulture.
   Wyman Elliot, Minneapolis.
4. Beekeeping as Related to Horticulture.
   Hamlin V. Poore, Bird Island.

PREMIUM LIST, ANNUAL MEETING, 1908.

All exhibitors are urgently requested to make their entries with the secretary at least a week before the annual meeting.

All exhibits must be in place by noon of the first day of the meeting to be entitled to compete for premiums.

Exhibitors competing must be members of this society and growers of the articles exhibited.

Grapes.

	1st. Prem.	2d. Prem.	3d. Prem.	4th. Prem.
Each variety shown.....	.75	.50	.25	....

APPLES (not including crabs.)

Each variety included in the 1908 fruit list of the society, or in the 1908 premium list of the Minnesota State Fair..	.50	.40	.30	.20

Collection, not to exceed ten varieties ....$20.00, to be divided pro rata.

Peck of any variety of apples, the fruit exhibited to be at the disposal of the meeting. An exhibitor may enter a peck each of as many different kinds as he pleases. $50.00, to be divided pro rata.

Top-worked Apples.

Collection of named varieties grown on scions top-grafted on other trees. Accompanying the name of each variety, shown on the same label (to be furnished by the management), must be noted the name of the variety on which it is top-worked. Fruit to be retained by awarding committee to test comparative keeping quality and reported on later. $25.00, to be divided pro rata.

Competition in "top-worked apples" is open to same territory as for seeding apples.

NUTS.

Each variety of edible nuts, 1 quart.....	.50	.40	.30	.20

PREMIUM LIST—Continued.

SEEDLING APPLES.

Five specimens (not less than 2½ inches in diameter) must be furnished of each variety exhibited.

Entries of seedling apples can be made only by owner of the original tree or his sole authorized agent.

Competition in seedling apples is open also to the western half of Wisconsin, the northern third of Iowa, and all of North Dakota, South Dakota and Manitoba.

Premiums will be divided pro rata among all entries commended by the judges according to the comparative merit of each as a commercial fruit.

Before payment of premiums awarded on seedling apples, a history and description of the tree and its fruit must be furnished to the Secretary.

Competition is open to all except on such varieties as are being prepagated for sale by some person other than the originator.

EARLY WINTER SEEDLING—The fruit shown must not have been kept in cold storage.
Premium $40.00, to be divided pro rata.

LATE WINTER SEEDLING—Same conditions as for early winter seedlings except that if found necessary the fruit shown may be retained and final decision reserved till later in the winter.
Premium $75.00, to be divided pro rata.

In each of the above two classes the varieties receiving the three highest awards will be designated as having received the first, second and third premium respectively.

BUSHEL BOX of any variety of apples.
$25.00, to be divided pro rata.

These boxes of apples to be sold Friday afternoon for benefit of Gideon Memorial Fund.

SECRETARY'S CORNER

SOUTHERN MINNESOTA HORTICULTURAL SOCIETY.—Notice of appointment is received of Mr. R. C. Livingston, of Spring Valley, Minn., to represent the Southern Minnesota Society at our annual meeting.

WISCONSIN STATE HORTICULTURAL SOCIETY—ANNUAL MEETING.—The annual gathering of this society has been changed from February to January, and this year will convene at Madison, Jan. 12-13-14.

RED RIVER VALLEY HORTICULTURAL SOCIETY.—This auxiliary society held its annual session at Crookston on Nov. 9th. The secretary received a cordial invitation to be present and address the meeting, but found it impossible to attend.

NATIONAL APPLE SHOW.—Have you forgotten the National Apple Show at Spokane, Washington, to be held Dec. 7-12? Special round trip rates have been granted from all points, we understand, for this exhibit. $35,000.00 to be distributed in prizes ought to get out a pretty good show of apples.

DELEGATE TO THE IOWA STATE SOCIETY.—Mr. L. R. Moyer, of Montevideo, has accepted the appointment as representative from our society at the annual gathering of the Iowa state society, which convenes in Des Moines the second week in December.

ONE REASON WHY SEEDLING FRUITS DO NOT KEEP WELL.—We do not know whether this is an unusual reason, but very few of our correspondents are as frank in speaking of it. Here it is: "I hope to get there this time, as I wish to exhibit the apples if they last that long, but I have a little girl, and she likes them very much." That must be a pretty good seedling.

ABOUT THE NORTHWESTERN GREENING.—Mr. S. H. Kenney, our veteran orchardist, says that the Northwestern Greening with him is hardy top-worked on the Alaska crab but not otherwise. He has them top-worked on other hardy stocks, but they have not succeeded with him so far except on the Alaska crab. An interesting fact to note.

DELEGATE FROM THE WINNIPEG SOCIETY. Word is at hand that Dr. H. M. Speechly, of Pilot Mounds, Man., has been appointed to represent the Western Horticultural Society at our coming annual meeting. The last delegate from that society, Hon. Wm. G. Scott, was with us two years ago, and some years before that Mr. A. P. Stevenson was with us as their representative. We are glad to again welcome a brother from the far Northwest.

ANNUAL MEETING, DAKOTA STATE HORTICULTURAL SOCIETY.—This meeting convenes in Fargo, Jan. 21, and is held at the same time, and indeed as a part of the Tri-State Grain Growers' Convention. Eminent speakers and authorities are secured to give addresses along horticultural lines and discussions follow them. The North Dakota society this year has approximately 140 members, and an effort will be made this winter, we understand, to secure an appropriation from the legislature for their benefit. Heretofore for some years the membership of the North Dakota society has been carried on the roll of the Minnesota society, our purpose being to assist them until they secure state recognition.

APPLE CROP OF 1908.—Twenty-five million barrels, or 62,500,000 bushels is the estimated yield this season, according to reports received by Harry J. Neely, secretary of the National Apple Show, of Spokane, from 15,000 growers operating

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in the various belts of the Union. The returns show that while droughts, excessive rains or pests wrought havoc in many districts in the middle-western, eastern and several southern states, the entire crop is fully as large as in 1907, and it is better distributed. Prices also are higher than last year. However, the domestic supply is smaller than at any time since 1895, for the reason that the demands for export are heavier and increasing yearly.

A Twice-Blooming Easter Lily.—"Last Easter we purchased an Easter lily which had one stalk on which were four or five blossoms. After the blossoms had withered, we threw the flower pot containing the bulb away, not thinking the bulb would grow and bloom again. But, after about two months, we found that it was sending up three healthful stalks. From this time on we watered it regularly and, last week, were rewarded by three large, beautiful blossoms, one on each stalk, whose perfume filled the room with their sweet fragrance. The interval of time between the two periods of flowering was five months. The lily was kept out doors all of this time except the last two weeks."

Sept. 26, 1908. Arthur E. Haynes, State U.

A Successful Orchard.—Mr. G. A. Anderson, of Renville, has fruited a successful crop of apples this year at his place on the prairies of western Minnesota, and sends the following encouraging report: "Have just sold the last of my Wealthy's. In all I sold 445 bushels, which brought $435.00. In this is included about twenty bushels of culls which sold for fifty cents a bushel. If these are deducted the average price would be about $1. per bushel for all varieties. The principal varieties were the Duchess, Wealthy and Whitney crab, with a few of Yellow Transparent, Tetofsky, Haas, Hibernal and some others. Think the Hibernal should be condemned, at least in southern part of state. With me it is a poor bearer, poor keeper, and hard to sell at any price where other apples are in market. The trees that produced this crop occupy about two acres of ground. These acres have been the best paying on the farm for many years, this being the third successive good crop I have had. In 1907 they produced 250 bushels, and in 1906 450 bushels."

Apples in Persia.—The following interesting extract from a letter written by the minister from Persia, at Washington, was received lately by Wm. T. Coe, one of our Minneapolis members. It will be found interesting reading to those engaged in developing fruits for this region.

"A large variety of apples grow in Persia, each province having its own particular kind. The nearest way of classifying them would be to say that in Persia we have four different kinds of apples.

"The spring apple, which is white and small in size and is very delicate and sweet in flavor. This crop is ready during the spring months. Owing to its delicate flavor and fragrance, it is called the 'rose water apple.'

"The summer apple, which is rose colored wholly or on one side. It is larger than the spring apple, and often it is quite good size, and is not as sweet (but a little sour flavor) as the spring apple. It is also harder.

"The autumn apple. It is sweet, large, delicate in flavor and fragrant, and keeps longer than the summer apple.

"The winter apple, which is hard, to allow it to keep through the winter, is sweet, and in some varieties slightly tartish; is large, tho in certain varieties it is small but always larger than the spring apple.

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"In every case the apples growing in Persia are better because of the soil or the climate or both—are very fragrant and much more tender, delicate and sweet than the apples in most of other countries. In fact this is equally true in regard to every variety of fruits in Persia.

"In order to secure the seed of varions apples and import them into America you will do well to write to the United States Legation at Teheran, Persia."

ABOUT THE ANNUAL MEETING.

Cross-Fertilize.—Prizes will be offered this year for apple seedlings grown from seed produced as the result of cross-fertilization if enough members show an interest in the contest and learn to cross-fertilize. Opportunity will again be given at the coming meeting to learn to do this, and with the personal instruction, using models, etc., it will be an easy matter to perform the work successfully in the orchard.

Spread the Notice.—This means the notice of the annual meeting, and you can do it in a number of ways. First, by interviewing your friends and neighbors, handing them any extra copy of the program you may have and urging them to attend the meeting; second, by getting the editor of your local paper to publish a resume of the notice, which in many cases can be done even after this magazine is received if attended to promptly. Approximately 300 attended the last annual meeting. With the present membership of the society there ought to be 500 at least.

Will you Come?—This means, will you come to the annual meeting—and why shouldn't you? As a member of the society you must be interested in some feature of the work presented, and the program shows a great diversity which is certain to touch the needs of every one somewhere. Will there be a better opportunity than this for you to get away from home this winter or for you to give the other members of the family an outing, combining recreation with instruction along practical lines? Don't stick at home but come out to greet us at the annual meeting.

Do You Know How to Graft?—If not, the annual meeting, opening in Minneapolis Dec. 1st, and continuing four days, will give you an opportunity to learn by actually performing all the operations connected with it. Each day, between one and two o'clock, there will be experts in attendance with a full outfit of grafting material prepared to show exactly how the work is done, and giving opportunity for each person seeking instrrction to do the work himself and carry home its result. Top-working is a very important part of successful orcharding in Minnesota, and every fruit grower should know how to do it. Now is your chance.

Publish Reports of the Meeting. Every year there are some who prepare brief reports of their experiences and observations at the annual meeting and give them to their local papers for publication. This practice should become general. There are scores in attendance who can prepare interesting reports giving something more than just a mere outline of the number in attendance, etc., and noting as well some of the important facts developed at the meeting, calling attention also to the opportunity of membership presented and the advantages thereof, giving either their own address to which membership fees may be sent or the address of the secretary. Marked copies of all such reports will come into this office through the clipping agency, and we hope there will be scores of such during the month of December.

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JOURNAL OF

ANNUAL MEETING

Minnesota State Horticultural Society,

DECEMBER 3-7, 1907.

TUESDAY MORNING SESSION.

The forty-first annual meeting convened in the auditorium of the First Unitarian Church, Minneapolis, and was called to order by the president, Prof. Samuel B. Green, at 9:45 o'clock.

Mr. Trafford N. Jayne rendered two highly appreciated vocal selections.

The President: In accordance with our time honored custom we will open our session this morning with an invocation, and I will call upon Mr. George J. Kellogg, of Wisconsin, to lead us.

Mr. Geo. J. Kellogg, of Wisconsin, then offered the invocation.

The President: Members of the Horticultural Society, I have the honor to present to you my annual address. This is something that has been customary in the history of the society, and I present this address to you with pleasure.

Prof. S. B. Green then delivered the "President's Annual Address." (See index.)

The President: We will now take up the regular program as outlined. The general subject this morning is small fruits, which will be treated in a series of papers to be presented. The first is a paper on the subject of raspberry culture, which will be presented by Mr. Hopkins.

Mr. W. J. Hopkins, of Bloomington, then read a paper treating of his experience of "Twenty-five Years in Raspberry Culture in Minnesota." (See index.)

Discussion.

The President: In the next paper Mr. Anderson will tell us his experience in growing strawberries on the prairie.

"Strawberry Growing on the Prairie," was the subject of a paper presented by Mr. G. A. Anderson, of Renville. (See index.)

Discussion.

The President: We will now pass to the next subject: This topic has to do with the training and pruning of the currant and gooseberry, and Mr. Elliot is to present a paper on this subject.

Mr. Wyman Elliot: I am not satisfied with this paper because I have taken up more time than was allotted to me, but I thought we might get some information out of it.

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Mr. Wyman Elliot of Minneapolis then presented a paper on the subject of "Training and Pruning the Currant and Gooseberry." (See index.)

The President: I will call on Mr. Buggs now so that the students can hear his paper. Mr. Buggs will speak of the shelter belt for the farm home.

"Shelter Belt for the Farm Home, Orchard and Garden" was the subject of a paper presented by Mr. Wm. A. Buggs, of Stockton. (See index.)

Discussion.

The President: This concludes our program for the morning, and I will now appoint a few committees:

Committee on Credentials—R. A. Wright, C. E. Older, A. B. Lyman.

Committee on President's Address—L. R. Moyer, G. A. Anderson, T. T. Bacheller.

Committee on Resolutions—LeRoy Cady, J. A. Howard, Walter A. Yahnke.

On motion of Mr. Andrews the meeting adjourned.

TUESDAY AFTERNOON SESSION.

The meeting was called to order at two o'clock by the president, Prof. Green.

The President: I would like all the delegates present to stand up, and a little later we would like to hear from them. I am first going to call on Mr. Brackett, and while Mr. Brackett is not a delegate in the regular way still he represents the United States government, and we are very much delighted to have him with us. Mr. Brackett is the pomologist of the United States Department of Agriculture. He is with us today for the first time in attendance on one of these meetings, and I am sure we shall all be glad to hear a word from him. (Applause.)

Mr. Geo. B. Brackett (Washington, D. C.): I am not accustomed to occupying a pulpit; I was raised a Quaker, and we did not have a pulpit at that time, and therefore I feel out of place in addressing you from this desk.

I have come here for the purpose of meeting with this organization for the first time in my life, although I have been hearing from you for a good many years. I wanted to know by personal acquaintance what you are doing in the way of fruit growing in this northwestern country. As I looked at your fruit in the room below I was perfectly amazed at the exhibit you are able to make in this cold climate. I had no idea that you could grow such fine fruit, and most of it is of your own originating. Some of the hardiest fruits are originated here in this section of the country, where you have every difficulty to contend with along the line of climatic conditions. I feel that every one of you is deeply interested in the pomology of this part of the country. I am not here to tell you anything new, because you may be doing more than I know of,

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but I want to learn from you what you are doing and how you are doing it. There are other sections of the country where they are trying to do the same thing, and all over the country we are trying to do something for the advancement of the pomology of the country and for humanity, and I feel that I am among a class of people that are far ahead in that respect of any other section of the country. We have isolated cases where individuals are working in their own way trying to originate some new varieties of fruit, an object that you have in view here, something that will stand the climate.

In other sections we have the same spirit of enterprise interested in other features of pomological work. In the South we have men trying to push the orange further north in order to grow it beyond its present latitude. You are all familiar with what is going on in the country in this line of work. Prof. Webber has been doing some interesting work in the way of originating new varieties of oranges which will stand a colder climate, and by introducing changes in the varieties of oranges he hopes to get an orange that will grow farther north than any orange grows now.

So it is all over the country. They are deeply interested, as you are here, and I am very glad to meet you for this first time and learn by personal contact with you how much you are doing and how great an interest you manifest in this great work. (Applause.)

The President: Next I am going to call on my good friend Mr. Harrison, from Nebraska.

Mr. C. S. Harrison (Nebraska): I am glad to bring you greetings from Nebraska. We do not have any fruit down our way, and I came up here to see if you would not give me an apple. I believe this is the fourth or fifth time I have been with you in your meetings, and I don't know how much longer I shall keep it up. I was only seventy-five two weeks ago. I enjoy these meetings exceedingly and am amazed at the astonishing progress you are making. I am saddened at the thought that we cannot meet again with the dear friends we were wont to greet, but they have journeyed to that country where "everlasting spring abides and never withering flowers," and they can pluck fruit from the Tree of Life that stands in God's fields.

A year from next summer in connection with the summer meeting of this society we want the National Peony Association to meet with you. There is a wide spread interest in peony growing. There will be a session of two days, and there will be delegates from the two Dakotas and some from Manitoba, and you will be able to enjoy one of the finest meetings possible. The people are beginning to understand something about peonies, it will be a great benefit to this part of the country; and the meeting can be gotten up and carried out with little expense. I believe we can get a thousand people together. I know that a good many choice varieties have been planted here in this neighborhood,

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and you can have a splendid exhibit. I want you to have this meeting in Minnesota and give your invitation at this meeting, so it can go down to Ithaca, New York, and you will see the association come up here with flying colors. (Applause.)

The President: Now I am going to call Mr. Hager, of Wisconsin. We would like to see him and know something about him.

Mr. W. S. Hager (Wisconsin): Fellow Horticulturists: The president said he would like to see me. I am on exhibition. (Laughter.) It is true this is my first meeting with the horticulturists of Minnesota, but it is not due to the fact that I have not wanted to meet with you before. I have often heard of the widespread interest your meeting excites and the excellent fruit exhibits you make, and after seeing some of the fruit down stairs I can fully endorse all I have heard. It reminds me of a story told of one of your foreign born citizens. He was in a neighboring state when he happened to drop into a church where a warm revival was going on. While the service was at a white heat the minister called on all those who wished to go to heaven to rise to their feet. They all did so but Ole. The minister said, "My friend, don't you want to go to heaven?" Ole replied, "Vall, mebbe havven bane a gude blase, but Meenesota bane blenty gude anuf for me!" (Laughter.)

The President: Kandiyohi county has a delegate here, and we would like to hear from him. I think Willmar is the meeting place of the society. We would be glad to hear from Mr. Frye as to what they are doing in the Kandiyohi society.

Mr. P. H. Frye (Kandiyohi County Horticultural Society): Mr. President, Ladies and Gentlemen; I have to plead what some of the other delegates have mentioned here, that this is my first experience in attending one of these meetings, but I am greatly surprised at the interest the people are manifesting in horticulture as evidenced by the attendance at this meeting and the eagerness with which they absorb horticultural knowledge. Up in Kandiyohi county we think we have great interest manifested, but compared with the interest you are showing here we are a back number. We think Kandiyohi county will yet forge to the front, and I think if we can continue to send delegates down here to get information as to what is being done by the society throughout the state, I believe our county will do things of which you will be proud. I thank you for the privilege of being permitted to make these few remarks. (Applause.)

The President: I am now going to call on our good friend Kellogg, and then I am going to ask Mr. Philips to say something because he always has something to say.

Mr. Geo. J. Kellogg (Wis.): I do not need an introduction to this audience. I feel perfectly at home here because my girl lives only five minutes walk from this building. I have been here so long and so many times that I almost feel as though I

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ought to live in Minnesota. The value of your time at this meeting is worth twenty-five dollars a minute, and I do not want to fool away any time. I just want to say I am glad to be here. (Applause.)

The President: Now Mr. Philips, get right up here in the pulpit where everybody can see and hear you.

Mr. A. J. Philips (Wis.): Ladies and Gentlemen, I am like the rest of them, glad to be here. I don't think my time, like Mr. Kellogg's, is worth twenty-five dollars a minute. I am under a little restraint today; my wife is here, and I have to be very careful. (Laughter.) I want to thank you for your attention; I have said as much as Kellogg did, and that is enough. (Applause.)

The President: Now I am going to call upon Mr. Tracy, the delegate from South Dakota.

Mr. G. A. Tracy (S. D.): Mr. President, Ladies and Gentlemen: I do not know that I have much to say at this time. I have been a member of this society for quite a long time, until the last three years I dropped out, but this is the first time I ever met with you. I am very glad to be here. I am sorry I did not come years ago, but I could not very well leave home. I do not know that I have anything more to offer at this time. (Applause.)

The President: We are glad to have these delegates with us and to hear what other societies are doing. Now I see we have Mr. Patten with us, and if he will just step up here and say a word I know we shall all be delighted to hear from him. (Applause.)

Mr. C. G. Patten (Iowa): Mr. President, I do not know what to say. I just came hurriedly out of the fruit room where I was busy arranging the exhibit we have here. I will only say briefly that it gives me great pleasure, as it always does, to meet with the horticulturists of Minnesota. I have been here so long and so many times that I feel quite at home among you, as much so as in my own state. So far in my work, I think I may state, I have done more for Minnesota than I have for Iowa, as the fruit has developed or in what has developed. When we have our exhibit ready for display, I think I shall be able to show you that I have been doing better for Minnesota—and not only for Minnesota but for Iowa and a very large portion of the northwest. I shall take pleasure by and by in showing you just what we have done. I thank you. (Applause.)

The President: I am now going to call on Prof. Hansen, secretary of the South Dakota society. Prof. Hansen has a budded tree here to which he wishes to refer, and at the same time we want him to say a word to the members of the society, something in the line the other delegates have said. I will ask Prof. Hansen to take up that matter at this time.

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Prof. N. Hansen (S. D.): Mr. President and Members of the Society: This plum tree I hold in my hand lacks two inches of being twelve feet high. It was grown in the nursery row, or it would have been bigger. The mother was a wild plum, and the father was an apricot. I do not know of any other plum tree that grows as fast as this. Here is another (indicating) of the same pedigree but not of the same individual. Here is a half-brother to this (indicating), and the mother of this tree is a Sioux Indian sand cherry and the father a Chinese apricot. These two trees have the same father but not the same mother. This I sent out last spring, but I did not want to give the name. This is a tree one and one-eighth inches in diameter. This (indicating) is a two year old tree one and one-half inches in diameter, the fruit looks almost like the Prunus simonii, and it is like that in flesh. This was referred to in Mr. Kohler's paper, and it illustrates the fact that there is something in pedigree. The mother of this is a wild plum tree. This small one (indicating) is a two year old tree, and some three year old trees are not as big as this (indicating the larger tree). The two year trees should be about that size, but they were crowded and swamped by the big fellows. I do not know of a tree in existence in the plum line that makes as much wood as this.

Mr. Patten: Has that large tree any thorns? Is it a thorny tree?

Prof. Hansen: You can examine it for yourself. There are thorns on the young branches. It blossomed very freely last spring and set some fruit, but it was a very poor plum year. The two year trees are too big to handle in the nursery. The scientific point I want to convey is this, that if you cross A and B, two distinct species, one large and one small, the stature of the hybrid is sometimes plus B instead of minus B.

Mr. Patten: The point I wish to bring out is that the wild plum has succeeded in putting its thorns upon the new product.

Prof. Hansen: Yes, but both parents have thorns; the fruit spurs are thorns. This is another (indicating). I have not only two, but five to twenty of these combinations. But are all prepotent? You could mix them all up, and you could not tell them apart. The Prunus simonii is prepotent in these cases.

The President: We had a couple of little items left over from the morning session. I think there were several present this morning who wished to bring out points in reference to Mr. Elliot's paper on the currant and gooseberry. If any one has anything further to say on this topic now is the time to do so, that is, in connection with the subject of the currant and gooseberry.

Discussion. (See index.)

The President: I think we have given about all the time we can spare to this subject, which is a very interesting one to many of you, and I am now going to call upon Mr. Moore to tell us about the shipment of apples from Fillmore county.

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Mr. O. W. Moore: Mr. President and Fellow-Horticulturists: I took upon myself the duty of reporting the amount of apples shipped from Fillmore county during the apple season of this past year.

Mr. O. W. Moore, of Spring Valley, then presented a statement showing the "Shipment of Apples from Fillmore County." (See index.)

Mr. Moore: The old Wealthy orchards did not bear in our location, but there were a good many new Wealthy orchards that came into bearing this year, which, if they follow up the alternate principle of bearing of the old orchards, will give us a crop of Wealthy every year from this year on. The old ones have alternated, and the younger ones no doubt will do the same.

The President: This is indeed a very encouraging report, 12,480 barrels of apples from Fillmore county. It is like a dream when we look back to the time when we thought one hundred barrels was a large shipment. I remember when Spring Valley shipped two or three carloads it was reported as quite an event in the production of apples in southern Minnesota.

The President: We will now have a paper that deals with the production of hardy nursery stock for Minnesota, by Mr. Strand.

Mr. Geo. W. Strand, of Taylors Falls, then read a paper on the subject of "Hardy Stocks for Minnesota Nursery Trees." (See index.)

Discussion.

The President: As Mr. Mitchell is not here, I am going to call on our friend Harrison who will talk about flowers, which is his favorite subject.

Mr. C. S. Harrison, of York, Neb., then read a paper on the subject of "Propagation and Culture of Perennials." (See index.)

The president appointed the following committees on awards:

Grapes, J. W. Murray.

Apples—single plates—J. P. Andrews.

Collections of apples, also topworked apples, Geo. W. Strand.

Pecks of apples, Dewain Cook.

Seedling apples, Clarence Wedge, Wyman Elliot and N. E. Hansen.

Nuts, R. A. Schutz.

The President: We have run a little over the time allotted to this session of the society. We shall now turn over the balance of this afternoon's time to the Minnesota Rose Society. I hope our rose society will do better than we have done in the matter of time. They are a growing, energetic and progressive organization, and I take pleasure in turning this session over to Mrs. Tillotson, the president of the society. The meeting of the horticultural society proper is adjourned for the day, but I trust that everybody present now will remain.

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THE MINNESOTA ROSE SOCIETY.

The President (Mrs. H. B. Tillotson): This being the initial performance of the Minnesota Rose Society in conjunction with the regular meeting of the horticultural society, I might say that we were organized at Excelsior four years ago as amateurs, and two weeks after organization we made an exhibit. Next year we held an exhibit at the same place and had more flowers, and two years ago we held our exhibit in Minneapolis and did still better, and last year the meeting was held in the mayor's reception room, which was filled with the most beautiful flowers imaginable. Last spring we became an auxiliary of the horticultural society, and we are now able to offer our members the privileges of the two societies. We try to do in flowers what the horticultural society does in fruits, etc. We hold meetings in winter and have papers on different phases of flower growing in Minnesota. Of course, there are a great many flowers of no value in Minnesota, but there are a great many that can be grown here, and it is our aim to give this knowledge to amateurs to show them how to grow flowers. We hope to produce roses from seedlings that will take prizes even in the American Rose Society. We will now take up the regular program, and the first paper is by Mrs. Ruff, one of our early members.

"Some Valuable Biennial Flowers," was the subject of a paper presented by Mrs. D. W. C. Ruff, of St. Paul. (See index.)

The President: The next paper will be read by Mr. Nordine, of Lake City.

Mr. Chas. Nordine, of Lake City, read a paper on the subject of "Rose Culture for the Minnesotan." (See index.)

Discussion.

The President: We will now listen to a paper by Mr. Wirth, the superintendent of the Minneapolis parks.

"Border Planting" was then discussed in a paper presented by Mr. Theo. Wirth, Superintendent of City Parks, Minneapolis. (See index.)

The President: We have one more paper on the subject of winter protection, by Mr. Hawkins.

Mr. John Hawkins, of Minneapolis, then read a paper on the subject of "Winter Protection of Flowering Plants." (See index.)

The President: This closes our program for the afternoon so far as the rose society is concerned, and I want to thank you all for your kind attention.

CONTINUATION OF TUESDAY AFTERNOON SESSION.

President Green: We still have a little time left before 4:30. Mr. Guildford, of Dubuque, Iowa, is here, and if he will say a few words to us we shall be glad to hear from him. (Applause.)

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Mr. W. H. Guildford (Dubuque, Ia.): Mr. President, Ladies and Gentlemen: I have had a long stored up ambition to visit the big horticultural society of Minnesota. I had a curiosity to come up here and see what things looked like. When I was fourteen years old I walked from St. Paul to St. Anthony Falls. There was no Minneapolis here then such as I saw when I came here today from the eastern part of the city of St. Paul to where I am now, and I do not think, the way it looks, that Minneapolis is through growing yet. Your society has kept pace with the development of the country, and I believe your success has kept pace with the development. I meet with many other societies of a similar nature, and they all talk about the Minnesota Horticultural Society, and I hear nothing but favorable reports. I thank you for giving me these few moments to talk to you. I expect to be with you two or three days and shall probably take part in the discussion of the various topics as they are presented. (Applause.)

The President: It is now half past four o'clock, and it gives me pleasure to introduce to you Prof. Coates P. Bull, of the University Department of Agriculture, who will talk to you on an interesting subject.

Prof. Coates P. Bull, of St. Anthony Park, then spoke on the subject of "How the Hybrid Becomes a Part of Both Parents," accompanying his remarks by many appropriate lantern slides.

WEDNESDAY MORNING SESSION.

The meeting was called to order at 9:30 o'clock by the president, Prof. Green.

The President: We will at once take up the program in its order, and as Mr. Ramsdell and Mr. Guildford are not here I will call on Mr. Fairchild to present his paper on the subject of "Nut Growing in This State."

Mr. H. S. Fairchild, of St. Paul, then read a paper on the subject "Nut Growing in Minnesota." (See index.)

Discussion.

The President: We will now take up the paper by Mr. W. H. Guildford, the delegate from the Northeastern Iowa Horticultural Society.

"Shrubs and Trees for Lawn and Park" was the subject of the paper presented by Mr. W. H. Guildford, of Dubuque, Iowa. (See index.)

Discussion.

The President: We will now take up item No. 5 on the program, "The Farmer's Orchard," by Rev. John B. Katzner. (See index.)

Discussion.

The President: The next paper we will take up is upon the subject of "Commercial Orcharding" and will be presented by Mr. Smith.

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Mr. T. C. Smith, of Lakeville, Minnesota, then presented a paper under the title of "My Commercial Orchard of Nineteen Hundred Trees." (See index.)

Discussion.

The President: We will now change the topic a little, and I will call for a paper by Mr. Crosby on the subject of poultry raising in connection with fruit growing.

"Progressive Poultry Raising an Adjunct to Horticulture" was the subject of a paper presented by Mr. S. P. Crosby, of Braham. (See index.)

Discussion.

The President: If there is no further discussion of this subject, we will drop it and take up another. I am now going to call upon one of our friends from Wisconsin, who is number seven on the program, Mr. Hager, who will speak on "Commercial Orcharding."

"Commercial Orcharding in North Wisconsin" was the subject of a paper presented by Mr. W. S. Hager, of De Pere, Wisconsin. (See index.)

Discussion.

The President: We will now have to pass to the next paper which treats of "Orcharding on the Dakota Prairie" and will be read by Mr. Tracy, of South Dakota.

Mr. G. A. Tracy of Watertown, South Dakota, then read a paper on the subject of "Orcharding on the Dakota Prairie." (See index.)

The President: It is a little late but we will just have time for another paper and perhaps a short discussion. I am now going to call upon Major Elwin, of Richfield, to tell about his plum orchard.

The subject of Major James Elwin's paper was "My Plum Orchard of Two Thousand Trees." (See index.)

Discussion.

The President: We are very much obliged to Major Elwin for this very good paper which he has given us on this subject.

On motion of Mr. Brackett the meeting adjourned.

WEDNESDAY AFTERNOON SESSION.

The meeting was called to order at two o'clock by the president.

MEMORIAL HOUR.

The President: It is a painful thing to have to part with those we love, and yet this thing we call death is not so dreadful; it cannot but be a good thing for us; that is the way I look at it. It comes to us naturally, and yet it is a right and natural thing that it should be dwelt upon at these gatherings because of this the great thing that enters into our lives.

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It has been the custom of our society to set apart a portion of a session in order to call to memory the image and thoughts of those that have gone before during the year that is past. And so we have met this afternoon to take up this very interesting and possibly dutiful task. During the past year several members of our society have passed on ahead of us. Mr. Frank Yahnke, Mr. H. G. Westman, Mrs. Charlotte O. Van Cleve and David Secor, I am going first to call upon Mr. A. J. Philips, of West Salem, Wisconsin, whom we all know, to say a few words of appreciation at this time in recalling the life and work of Frank Yahnke.

Mr. A. J. Philips, of West Salem, Wis., then made a brief address "In memory of Frank Yahnke." (See index.)

The President: Certainly the memory of Mr. Yahnke is very dear to us. We have missed his pleasant face and his cheery smile. We had him nearly every year at the banquet, and he made lots of fun. We thought a banquet without Mr. Yahnke was hardly complete.

I am now going to call on Mr. S. D. Richardson, who will speak about some of the others that have gone before. (See index.)

The President: This brings to a close what we have come to know as the "Memorial Hour."

At this time we turn over this whole session and this entire audience to the Woman's Auxiliary, which takes charge of the program for the remainder of the afternoon. They have a very fine program prepared, and I know you will all appeciate it if you will stay here and listen to it, and I sincerely hope you will do so. We will now turn this meeting over to Miss White, the president of the Auxiliary.

WOMAN'S AUXILIARY.

The meeting of the Woman's Auxiliary was called to order by the president, Miss Emma V. White, at 2:15 o'clock.

The President: I am not going to take up any more time than to say that I hope you will all stay, because I think we have something good in store for you.

I will call for the first item on the program, which relates to home study for women and will be presented by Miss Margaret Evans, of Northfield.

"Home Study for Women" was the subject of an address delivered by Miss Margaret J. Evans, of Northfield. (See index.)

The President: Perhaps you may think the next subject is as foreign to the meeting as the one just given. All women do not find time to study, but all women, I presume, do find time to pay attention to dress, and we are accused of taking altogether too much time for the latter. I am glad to introduce Mrs. Blair, who will talk to us about dress, and perhaps she will say something along the line of the danger of giving too much attention to the subject of dress to the exclusion of what we have just heard about. (Applause.)

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Mrs. Margaret J. Blair, of St. Anthony Park, then read a paper on the subject "Dress and the Part it Plays in the Home of Average Means." (See index.)

The Thursday Musical Club, of Minneapolis, under the direction of Mrs. W. O. Fryberger, then rendered a number of songs, which were thoroughly appreciated by the audience.

The President: We are very fortunate in having with us today the gentleman who is to give us the next talk, Mr. A. P. Pierce, Mayor of Red Wing. We always like to hear from people who do things, and we know they have done things down at Red Wing, because we saw what they did at the fair last fall, and their work was along aesthetic as well as along commercial lines. We would be glad to hear from Mayor Pierce something of how that work was accomplished.

"Municipal Improvement" was the subject of an address then delivered by Hon. A. P. Pierce, mayor of Red Wing. (See index.)

Discussion.

I will now call on Mrs. Bramhall who will speak on the subject of forestry. Mrs. Bramhall has appeared before you on a former occasion, and I can assure you there is something good in her talk.

Mrs. W. E. Bramhall, of St. Paul, then discussed "Women's Interest in Forestry." (See index.)

The President: I am now going to call for the next and last paper, and if there is any time we will have a discussion on what has gone before. We have already twice heard from Mrs. Underwood in regard to the work at Lake City, and she has something to tell you of the result of the third year's work.

Mrs. J. M. Underwood: It is with great hesitation that I come before you to speak of the work at Lake City after Mr. Pierce has told you of what they have accomplished at Red Wing. The word I may say may aid the smaller cities and towns, but Red Wing is quite a large city.

Mrs. Anna B. Underwood, of Lake City, then set forth the results of "A Third Season in Improvement Work." (See index.)

The program of the afternoon being concluded, the meeting was declared adjourned.

Following the adjournment Dr. Thos. S. Roberts, of Minneapolis, delivered an exceedingly interesting address on "Our Native Birds and Their Relation to Horticulture." The address was illustrated with many beautiful colored lantern pictures of the various birds found in this region. The lecture was listened to with profound interest by the entire membership in attendance at the afternoon session.

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THURSDAY MORNING SESSION.

The meeting was called to order at 9:30 o'clock by the president.

The President: The first items on our program this morning are the reports of the secretary and treasurer, but as those officers are not here, we will take up the vice-president's report. These reports are not to be made formally but are simply to be short reports to supplement the regular reports. As the first and second districts are not represented, I will call upon Mr. Walden, of Northfield, who represents the third congressional district, for a short report, just two minutes and no more.

Mr. J. M. Walden (Northfield) Third Congressional District. (See index.)

The President: Mr. Bacheller, representing the fourth district, is not present, but he has left his report with the secretary, and it will be published in the proceedings. I will next call on Mr. W. S. Higbie, who represents the fifth congressional district.

(See index.)

The President: The vice-president from the sixth district is not present, so I will call upon Mr. Orton, of Marietta, of the seventh district to say a few words in the way of a report.

Mr. C. J. Orton (Marietta) Seventh Congressional District. (See index.)

The President: This finishes the reports of the vice-presidents so far as they are present. All the reports will be published in the annual proceedings.

The next will be the report of superintendents of trial stations, and I will first call upon the Hon. T. E. Cashman of Owatonna to present his report. These reports are to be made in the same informal way as reports of the vice-presidents, and the formal reports are filed with the secretary and printed in the proceedings.

Hon. Thomas E. Cashman, Owatonna trial station. (See index.)

The President: We always expect to hear something practical from Mr. Cashman, and we were not disappointed in this instance. Now, the next man I am going to call upon is Dewain Cook, who has charge of the Windom trial station. (See index.)

Discussion.

The President: The secretary is now in the room, and I will at this time ask for his report.

Mr. A. W. Latham then submitted "The Secretary's Annual Report." (See index.)

On motion of Captain A. H. Reed the report of the secretary was unanimously adopted.

The President: We will next have the report of the treasurer, Mr. Strand.

Mr. George W. Strand then submitted "The Annual Report of the Treasurer." (See index.)

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The President: I wish to say that the books of the treasurer and the secretary have been gone over by a special accountant and found to be correct.

On motion of Mr. C. E. Older the report of the treasurer was unanimously adopted.

The President: We will now have a report from Mr. Wyman Elliot, the chairman of the executive board.

"The Report of the Executive Board" was submitted by its chairman, Mr. Wyman Elliot. (See index.)

Mr. Wyman Elliot: It is a mistaken idea on the part of our growers and propagators in thinking that they are going to be swindled when they give their plants out to the experiment stations for trial. Citing the Carrie gooseberry, we had an experience with that. We had that out at trial stations all over the United States to test it and to find out what was said about it. Every one that has a seedling that is being grown for the betterment of our fruit industry should see to it that they send a plant to our experiment stations and let them test it there. The test has got to come from that point before they can be accepted by any one. You may stand as high as President Roosevelt in the estimation of the people, but until you have your plant tested you will not get any one to back it. It takes years of test to develop what a fruit will do. Many of our apples and many of our plants had been tested for years and years before they were brought out. In order to get your fruit to the front you must have it tested.

The President: It is a very good way of advertising.

Mr. Elliot: I think so. I know of no better way of advertising than to get a good endorsement from experiment stations, as we have been doing with the Carrie gooseberry all over the country.

The President: We will now have the report from the La Crescent station, of which Mr. F. I. Harris is the superintendent. (See index.)

The President: We have a lady who has charge of the Sauk Rapids trial station, and I take pleasure in calling upon Mrs. Stager to give us a report from that station. (See index.)

The President: Mr. Parks and Mr. Cowles are not present, so I will call upon Mr. McLeran, who is in charge of the station at Wrenshall. (See index.)

The President: We used to think they could raise nothing at Wrenshall but Kelly brick, but they have good soil, and it is good for something beside brick. They raise good apples, strawberries, etc. I believe that is going to be a good district for fruit, especially apples and gooseberries and raspberries.

I see Judge Moyer has come into the room, and I am now going to ask for a report from the Montevideo trial station. (See index.)

The President: We will now have just a few words from Captain Reed, who represents the Glencoe trial station. (See index.)

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The President: We will now have the pleasure of hearing a report of the Minnesota Rose Society, which is an auxiliary of the horticultural society. Mrs. F. H. Gibbs is secretary, and we want to hear a few words from her. (See index.)

We will now pass to the report of the Committee on Ornamental List, of which Mr. LeRoy Cady is chairman.

Mr. LeRoy Cady: We have made a little addition to the list, two or three. We would suggest the Viburnum tomentosa, or May Day tree, and further we would suggest a list of perennials. I think there has been a list of perennials suggested to the society. The list is made out and will be published. I might read a few of them, but it is simply a list of common perennials. Mrs. Sawyer has gone over this list, has made it up largely and has picked out those that are best adapted to general planting.

Mr. LeRoy Cady then submitted the "Report of the Committee on Ornamental List." (See index.)

Discussion.

The President: We are going to have a talk now by Mr. C. G. Patten on some of his seedling apples. There is no man better qualified, no man in this country, and I do not know of any one anywhere who is better qualified for talking on this subject of seedling apples than Mr. Patten, and I do not know of any one who has done more in the way of producing new varieties, or any one who has worked so faithfully and so persistently along this line as Mr. C. G. Patten. He has done a whole lot of good, and I take great pleasure in presenting him at this time. (Applause.)

"My Seedling Apples." Mr. C. G. Patten, Charles City, Iowa. (See index.)

Discussion.

The President: I knew you would be glad to hear from Mr. Patten, and I know we could continue this discussion an hour longer. I also know we shall have a reply from Prof. Hansen, and he will have a chance to reply to Mr. Patten tomorrow morning, and you will understand that this matter will be taken up and threshed out at that time.

Now I am going to give you another treat. I am going to call on Col. Brackett for a short talk at this time. (Applause.)

Mr. Clarence Wedge: I know the society with me appreciates Mr. Patten's work and his presence with us and the excellent talk he has given us, and I want to move that we express our appreciation by a rising vote.

The motion was numerously seconded and, being put to a vote, prevailed unanimously, the members rising to their feet.

The President: Mr. Patten, this will give you some faint idea of the high appreciation in which we hold your work.,

The President: We will now have a short talk from Col. Brackett.

Col. G. B. Brackett (Washington, D. C.): Mr. President, and Members of the Horticultural Society: I fear after the talk Mr. Patten has given you that what I may say will not be of much

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importance. Since I came here I have written a paper—you can hardly call it a paper—at odd times, because it was impossible to do so before I left Washington. I received a very kind invitation from your secretary to either send a paper or attend the meeting. At that time I was very busy, and I did not reply; but your secretary is a very resourceful man, and he wrote to Mr. Hays to have him intercede to have some one come here, and Mr. Hays referred the letter to Dr. Galloway, and it came to me with a request that I come. I am expected to obey orders when I am under Uncle Sam's authority. So I replied that I would be here, for I have been anxious for many years to meet with you. I have been keeping track of what you have been doing here, but after getting here I am greatly surprised to see that you have been doing even beyond what I thought I had learned, and what I had noted in my paper was not really the point I wished to make, and so I had to write it over again.

I did not come here to give you any instruction, because I find you do not need anything of that kind, but I came to give you encouragement, and I find you do not need encouragement. because you are far ahead of what I expected, so I fear this paper will not prove very important.

Col. G. B. Brackett then read a paper on the subject of "Originating New Varieties." (See index.)

On motion of Mr. Wedge the meeting adjourned.

THURSDAY AFTERNOON SESSION.

The meeting was called to order by the president at 2:00 o'clock.

The following resolution was submitted by a member and read by the president.

"Resolved, That the Minnesota State Horticultural Society extend a most hearty and cordial invitation to the National Peony Association to meet with them in June, 1909, for a two days' session, at which time a most cordial welcome will be extended to them."

On motion of Mr. Clarence Wedge the resolution was unanimously adopted.

The President: The next order of our program is the consideration and adoption of the fruit list. We can pass a tremendous amount of time discussing this fruit list, but we have a good committee who have worked faithfully on this list, and it will facilitate the work of the society if a lengthy discussion of this matter can be avoided.

Mr. J. P. Andrews, as chairman, then submitted "Report of the Committee on Fruit List." (See index.)

Mr. J. P. Andrews moved the adoption of the report.

A motion offered by Mr. Elliot to put the Evelyn on the list was then put to a vote and was declared lost.

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The motion offered by Mr. Andrews to adopt the fruit list as reported by the committee was put to a vote and prevailed unanimously.

The President: We did pretty well with our program this afternoon, and we have got a little time to spare. I am going to call on Mr. Gardner to tell us something that is good for us.

Mr. C. F. Gardner (Iowa): Mr. President and Ladies and Gentlemen of the Minnesota State Horticultural Society: It gives me very great pleasure to be permitted to appear before you today to say a few words. I do not come before you as a stranger, for I have been a member of your society, and a life member, for many years, and as I was leaving Iowa the other day to attend this meeting one of my fellow citizens asked me if I was a Minnesotan. I told him I was when in Minnesota, and that when I was in Iowa I was about half a Minnesotan.

I must acknowledge that in several respects you are doing better here in Minnesota in conducting horticultural affairs than we are doing in Iowa. You are more concentrated—I really do not know how to find language to express myself to define to you the conditions as I regard them, and if I should attempt it I might say something I might wish afterwards that I had not said, and so I am going to pass that by at this time. The way you are organized and the way in which you conduct your business you are not, as we are, divided into five different societies. We have five societies, and four of those societies are continually devising plans to induce us as a state society to raise their appropriation. They get $250 each per year, and they want more, and you know that all these things detract attention from the real object of the state society and ought to be done away with. Our society meets next Tuesday, and while I am reluctant to raise this point, there is a feeling of jealousy that enters into almost everything we do. We might as well acknowledge it first as last. I do not see even a little of that spirit in your society, and you are better in that respect than our society.

Before I say anything more I want to call your attention to the fact that you may have noticed an unusually pleased expression upon the faces of Mr. Moore, Mr. Elliot and myself. We have felt very much gratified since this meeting commenced. Every year after the opening of the meeting it has been customary with the president to appoint a committee of three to keep Philips straight. This year his wife is present, and the reason we look so pleased is because we have been rid of that responsibility. (Great laughter.)

Our state society meets next week, and I want to say a few words in reference to the work done by our fellow member, Mr. Patten. I believe in giving a man praise if he has earned it for what he has done while he is alive. (Applause.) I want to tell you, gentlemen—while Mr. Philips is looking around to see who is here (laughter)—I have a little article written that I am going

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to read at Des Moines next week regarding Mr. Patten and his work, and you will have an opportunity of seeing it in our published report. As I said before I believe in praising a man for what he has done while he is alive if he deserves it, and I want to tell you what Mr. Patten deserves from the state of Iowa and horticulturists in general. He has done more in this line than any other man I know of. In fact, I do not believe there has ever before been an exhibit produced by one man such as he has here. I believe it is far in advance of anything ever shown before. I am really pleased at the action this society has taken in the matter and the way you have treated Mr. Patten and his work. It gives me the greatest pleasure in the world, and when I go home and attend the meeting of our society next week, if I can find words to express myself, I am going to tell our people what you have done here today and what you have done ever since this meeting opened. I shall thank God if he will give me power to express it. I am very greatly obliged to you for your attention. (Applause.)

Mr. J. F. Benjamin: With a little more experience in the pulpit Mr. Gardner would make a very good preacher. (Laughter.)

ELECTION OF OFFICERS.

The President: The time has now arrived when we are to elect officers for the ensuing year. It will be necessary to have tellers for this election, and I will appoint Robert Wedge, LeRoy Cady and G. A. Anderson as tellers.

The President: While Mr. Gardner was speaking about Mr. Patten it occurred to me that a man that has done as much as Mr. Patten has done ought to be rewarded, there ought to be some way of pensioning a man who has done what he has done. It would be only a small compensation for his work, and if we were under an empire it might be accomplished by a royal decree, but we cannot do that.

The President: The offices to be filled at this election are those of president, treasurer, nine vice-presidents and three members of the executive board. Those only can vote who have paid membership for three successive years, including this year, otherwise they are ineligible. Life members can also vote.

Capt. A. H. Reed: As we cannot under the constitution authorize the secretary to cast the ballot for the nominee as president, I wish to make a nomination, and I hope and believe that every member of the society will vote for it. While I do not wish any harm to Prof. Green, I do wish to see him continued in the office of president, and as long as he is under a good fat salary he can afford to take this office. I think he is just the man for the position, and I therefore take pleasure in nominating him for that position, and hope he will not only serve this year, but for a number of years to come. (Applause.)

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The nomination was numerously seconded, a ballot was taken with the result that Prof. Green received the unanimous vote of the society for the office of president.

The President: I want to thank you very much for this expression of your approval. I told you a year ago when you elected me that I believed I could fill the office acceptably, and it is certainly pleasing to know that I have done so or sufficiently so that you want to try me again. I want to tell you that in the coming year I will do just as well as I know how. I enjoy this position—there is no use being modest about it and say one thing when I mean another—because I do. It is an honorable thing to want it, and I want to tell you that I am proud to be your presiding officer today, and I shall be proud to be your president for the coming year. I thank you very much. (Applause.)

Mr. Geo. W. Strand was nominated by Mr. G. A. Anderson to succeed himself in the office of treasurer, and a ballot being taken Mr. Strand was declared unanimously elected.

The President: It is now in order to fill vacancies that occur in the executive board for the three year period. One of the members whose term expires is Mr. J. P. Andrews.

Mr. Thos. E. Cashman placed in nomination the name of Mr. J. P. Andrews, and a ballot being taken he was declared unanimously re-elected.

Mr. J. F. Benjamin placed in nomination Judge L. R. Moyer to succeed himself, and a ballot being taken Judge Moyer was declared unanimously elected.

The President: Nominations are now in order for a member of the board to succeed Thos. E. Cashman, who was appointed by the executive board to fill the unexpired term of Mr. Yahnke.

Mr. R. A. Schutz nominated Mr. Cashman, and a ballot being taken he was unanimously elected to succeed himself.

The President: After the practice he had last winter I think Senator Cashman ought to give us a speech as good as he can turn out on the spur of the moment.

(Calls for "Cashman, Cashman.")

Hon. T. E. Cashman: I appreciate these sentiments of good will, but I do not make a speech very often for the simple reason that I do not know how. I enjoy these meetings very much; they are very instructive, very beneficial and help me in a hundred ways, financially and otherwise. I want to tell you that the horticulturists of this state stand better with the legislature than any other class of people in the state, because everything that you have asked for was granted. Prof. Green would come over and say he wanted a thing, and we all voted for what he suggested. (Applause.) There is no question but what this horticultural society is doing a great and grand work in encouraging the planting of trees, fruit and flowers in this state, but, gentlemen, we should go slow in advocating varieties, the planting of varieties not thoroughly disseminated throughout the state. We have

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thousands of seedlings in our state of more or less value, but they have not been disseminated enough to tell whether we should advise farmers to plant a large quantity or not. Therefore we should heed the advice to go slow. As long as we have varieties like the Wealthy, Duchess, Patten Greening and others among apples we can afford to go slow. It is far better to let varieties find their way than to force them on the people and have them prove failures. I will not take up more of your time except to thank you for this mark of your esteem and appreciation. (Applause.)

The President: Talk about my having anything to do with it! I had nothing to do with it. I simply went down to tell them what you people wanted and that was enough; and then we had Cashman to make one of his persuasive speeches, and we didn't have to do anything when we had that kind of men there.

The President: The next in order is the election of nine vice-presidents. Now just a word in regard to the vice-presidents. That term in this connection is just a trifle misunderstood. The first meaning that is generally attached to the office is that the vice-president is to take the place of the president when occasion requires. These vice-presidents are elected from the different congressional districts, and the purpose is to have them make reports each year of the conditions existing in their respective districts We aim to change these vice-presidents each year. It has been customary for the secretary and a few of the rest of the executive board to get together and make out a list of these prospective vice-presidents and present the names all at one time. The society can do as it pleases in regard to electing them. We have done this at this time, and Mr. Elliot has a list of nine of them which he will present at this time.

Mr. Wyman Elliot then presented the following list of nominees for vice-presidents from the various congressional districts:

First Congressional District, S. H. Drum, Waseca.
Second Congressional District, John Bisbee, Madelia.
Third Congressional District, C. H. Andrews, Faribault.
Fourth Congressional District, F. F. Farrar, White Bear.
Fifth Congressional District, Thos. Redpath, Wayzata.
Sixth Congressional District, Anton Wilwerding, Freeport.
Seventh Congressional District, C. C. Selvig, Willmar.
Eighth Congressional District, S. P. Crosby, Braham.
Ninth Congressional District, Prof. Wm. Robertson, Crookston.

Mr. S. D. Richardson: I do not know anything about Mr. Bisbee who is on the list to represent our district. He may be a first rate man, but I would like to have a vice-president in our district who would report for the whole district and not just what he is doing on his own premises. We have had only one vice-president who has reported for the whole district.

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The President: Mr. Bisbee will make a report that will be perfectly satisfactory to you. He comes from Madelia, and he has one of the best seedling orchards in the state or in the country.

Mr. Richardson: I have no objection whatever to Mr. Bisbee; I don't know him; all I want is a report from the entire district.

The President: I do not think Mr. Richardson knows the method we pursue in this matter. The last two years we have provided a supply of blank forms for the vice-presidents which they send out to various people in their districts, and when those blanks are returned filled in they collate the report from the whole district. The vice-president from your district has been equipped with such blanks, and he will make a report next year that will make your head swim. (Laughter.)

Mr. C. C. Miller: Mr. Higbie from our district sent me one of those blanks, and I filled it out; but if we don't fill them out and return them the vice-president is not to blame.

On motion of Mr. Wyman Elliot the secretary was instructed to cast the ballot of the society in favor of the vice-presidential nominees.

The meeting was then declared adjourned.

MINNESOTA STATE FORESTRY ASSOCIATION.

The meeting of the Forestry Association was called to order by its president, Hon. S. M. Owen, at 3 o'clock.

The President: We will now turn from the consideration of flowers and fruit to the consideration of trees, trees of a different kind from those which you have been speaking about. We have to present to you some important matters, the matter of tree growing—and that ought to concern you fruit growers very much indeed, particularly as the kind of trees we are to talk about this afternoon are so often the foster parents of the fruits that you produce. We have a common interest in the forests, and therefore I am quite sure we are going to interest you this afternoon during this session quite as much as any of the other sessions have interested you.

The first number on the program is on the subject of "Planting on the Prairie Farm," by S. B. Detweiler, of the State Experiment Station and of the forestry school of the state. He is a fair sample of the sort of young men that are being developed in the United States with reference to the intelligent treatment of the forest question as it now confronts us, and I am sure you will find his discussion on tree planting on the prairie an exceedingly interesting one. Since Mr. Detweiler is not here at this moment we will call him later. The second number on the program is not here, and I am going to call on Prof. Green to talk to us on a subject he is fully conversant with, forestry education.

"Forestry Education" was the subject of an address delivered by Prof. Samuel B. Green, of the State University. (See index.)

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Discussion.

The President: Mr. Detweiler is present now, and the complimentary words of the president a little while ago are still in force. The audience can see for itself whether the remarks were justified or not. (Applause.)

"Planting on the Prairie Farm" was the subject of a paper presented by Mr. S. B. Detweiler, of the State Experiment Station. (See index.)

Discussion.

Before announcing the next number I am going to appoint a committee on nomination of candidates for officers of this association, and also a committee on resolutions. I announce these committees now so that the members may get together to formulate a report and thus facilitate the labor and save time. The committee on nominations will consist of Messrs. J. P. Andrews, C. E. Older, A. B. Lyman. The committee on resolutions: Gen. C. C. Andrews, Prof. S. B. Green and Mr. Geo. W. Strand. I see Mr. Rhodes is present and will call on him for his paper.

"The Attitude of the Lumbermen towards Forestry" was then discussed in a paper by Mr. J. E. Rhodes, of Minneapolis, secretary of the Northern Pine Manufacturers' Association. (See index.)

On motion of Capt. A. H. Reed, of Glencoe, a vote of thanks was tendered Mr. Rhodes for his able and valuable paper.

The President: The next subject will be upon the commercial value of forests and will be considered by Mr. P. B. Walker.

Mr. Platt B. Walker, Jr., of Minneapolis, then read a paper setting forth the value of "Forestry Commercially Considered." (See index.)

Hon. S. M. Owen, of Minneapolis, then delivered the "President's Annual Address." (See index.)

The President: We will now have the report of the Secretary, Mr. Cheyney.

The "Annual Report of the Secretary" was then submitted by Mr. E. G. Cheyney, of St. Anthony Park.

Prof. S. B. Green: Mr. Detweiler spoke of the points that should be considered in making our planting, or in setting plantations on prairie farms, and there is supposed to be a fund of information on that subject at the experiment station. Any one who wants to make the effort to see if there is such a fund of information there is welcome to test the matter, and we would be glad to have them write either to the forestry station or to the experiment station in relation to taking up forestry work. It seems to me this forestry work has now reached a point where there is enough interest and enthusiasm to make the forestry association a self-supporting organization, and I believe matters have reached the point where it can be done. We intend to have something done in that direction next year. I think you will all hear of some new life in the association before long: at least I hope so. (Applause.)

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The President: I believe the committee on nominations is now ready to report.

The committee on nominations, through Mr. C. E. Older, then submitted the following report:

Your committee has the honor to submit the following nominations for officers for the ensuing year: President, S. M. Owen, Minneapolis; Vice President, Prof. T. L. Haecker, St. Anthony Park; Secretary-Treasurer, E. G. Cheyney, St. Anthony Park; Executive Committee, A. W. Latham, Prof. S. B. Green, J. P. Andrews, Wyman Elliot and Geo. W. Strand.

(Signed)
C. E. Older,
J. P. Andrews,
A. B. Lyman,
Committee.

On motion of Mr. C. E. Older the report of the committee was unanimously adopted and the nominees declared elected.

On motion of Mr. Wyman Elliot the secretary was instructed to cast the unanimous ballot of the association in favor of the nominees named.

Gen. C. C. Andrews submitted the following resolution:

Whereas, we appreciate the great importance of forest wealth for best national development, and the great need of education in forestry, and,

Whereas, the land grant colleges and experiment stations have been a great uplifting force in the development of American agriculture and have fully justified the expenditure of national funds for their support, and,

Whereas, these institutions are admirably adapted to teaching forestry and will do it if provided with means, and,

Whereas, the income from the National Forest Reserves has reached the sum of $1,500,000 per year, which is now paid into the national treasury and is used for general expenses of the government, and,

Whereas, there is a certain fitness that appeals to us in using a portion of the income from the National Forest Reserves for teaching forestry and thus aiding and perpetuating our forest wealth, now, therefore, be it

Resolved that we recommend that a liberal portion of the income from the National Forest Reserves be appropriated by Congress to the several states and territories for instruction and experimentation in forestry in the agricultural colleges and experiment stations.

Upon motion this resolution was unanimously adopted.

Gen'l Andrews also submitted the following:

"Resolved, That in the lamented death of Mrs. Lydia Phillips Williams, late secretary of the Minnesota State Forestry Association, which occurred since our last meeting, this

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association has suffered a real loss, and we wish to place on record our high appreciation of her intelligent and disinterested service in behalf of forestry."

On motion of Gen. C. C. Andrews the resolution was unanimously adopted.

The President: Mrs. Williams was a great honor to this association, and we sincerely regret her sudden taking away.

There being nothing further to come before the meeting. I now declare the Forestry Association adjourned.

FRIDAY MORNING SESSION

The meeting was called to order by President Green at 9:30 o'clock.

The Chairman: The session this morning is devoted to the Plant Breeders' Auxiliary. I am sorry to say that Mr. Underwood, who is president, was compelled to go home yesterday on account of illness, and the duty to preside has been placed upon me. The first item on the program will be the report of the secretary of the Auxiliary, Mr. Clarence Wedge, of Albert Lea.

Mr. Clarence Wedge as secretary then submitted a report of "A Year's Experience in Plant Breeding." (See index.)

Discussion.

The President: We will now take up No. 5 on the program, which will be a paper by Mr. Haralson, who is now in charge of the state fruit breeding farm recently purchased at Excelsior. I think we shall all be glad to know Mr. Haralson.

Mr. Chas. Haralson, of Excelsior, assistant in charge of the State Fruit Breeding Farm, then read a brief paper expressing his views as to "How Members of the Society May Assist the Fruit Breeding Farm." (See index.)

Discussion.

The President: The next paper will be read by Mr. Groat, and he will tell us about growing seedling strawberries.

Mr. H. G. Groat, of Anoka, then read a paper on the subject of "Growing Seedling Strawberries." (See index.)

Discussion.

Prof. N. E. Hansen, of Brookings, S. D., then briefly replied to Mr. Patten and immediately followed his remarks with the reading of his paper on the subject of "Promising Material for Cross-Breeding Plums and Cherries."

Discussion.

The President: I will now call on Prof. C. B. Waldron, of North Dakota.

Prof. C. B. Waldron, of the North Dakota Agricultural College, then described in a paper some "Lines of Experimentation in Horticulture and Their Practical Application." (See index.)

The President: The next paper is one by Mr. Monson, of Minneapolis, but as he is not present I will undertake to read it.

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"Breeding New Roses" was the subject of a paper prepared by Mr. John Monson, of Minneapolis, and read by Prof. Green. (See index.)

The President: I am now going to call on Mr. Elliot to talk on the seeding apples that are shown in the fruit room below.

Mr. Wyman Elliot, of Minneapolis, then submitted a brief report upon the "Awards on Seedling Apples at the Meeting, with Exhibit of Varieties." (See index.)

There being no further business the president declared the meeting of the Plant Breeders' Auxiliary adjourned.

FRIDAY AFTERNOON SESSION.

The meeting was called to order at 9:30 o'clock by the president.

The President: The general subject for this afternoon is "Three Orchard Symposiums." I am first going to call on Mr. Kenney.

Mr. Seth H. Kenney, of Waterville, then read a paper discussing the "Treatment of Ground in the Adult Orchard." (See index.)

Discussion.

Mr. Wyman Elliot: There is another matter that might as well be discussed now as at any other time. It is in regard to life membership. We have three members on our roll that have done good service in the society. They are getting along in years, and I believe if we are going to throw bouquets we should do so while people are alive. I would therefore move you, Mr. President, that Mr. R. A. Schutz, Mr. T. E. Perkins and Capt. A. H Reed be made life members of this society.

The President: This is the recommendation of the executive board. This matter has to come before the executive board first, and they submit their recommendation, and then it comes before the society for adoption. I believe it would be a great pleasure to all of us to recognize the achievements of these three men by electing them to life membership in the society. Personally I know they are worthy, and it would give me great pleasure to have this done. I do not know whether you desire any time for discussion here, but I do not believe it is necessary. I believe the members of the society recognize the worth of these men, their moral worth and their mental strength and the work they have done for the society, and will be pleased to honor them in this way.

The motion was numerously seconded and, being put to a vote, prevailed unanimously, the members rising to their feet.

On motion of Mr. A. W. Latham the delegates from neighboring states were recognized by being made honorary members of the society for one year.

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Hon. Thos. E. Cashman: While it is somewhat of a departure from our regular program, I would like to take up at this time a matter that I deem of such importance that I trust you will indulge me for a few moments. I am much pleased with the appreciation which the members of the society have shown for the work of Mr. C. G. Patten, of Iowa, for the grand work he has done for this central West. There is no doubt but that he has done more for us along that line than all of the others put together in the central West. He has done more for us, gentlemen, than Luther Burbank has done for California when we take into consideration the results of the work of both of these gentlemen. (Applause). Mr. Patten has done that work without any remuneration or compensation and without the expectation of receiving any. If we step down into the fruit room below and view the grand exhibition of fruits brought about by cross-pollonization, something that has been undertaken by but few in this country, we can recognize and appreciate only in a small measure what he has accomplished. There are dozens, yes, hundreds of other varieties that he has brought out at the present time that are of more value than those he has exhibited here today, and he is at just the beginning, we might say, of his great work.

But, gentlemen, in order to carry on this work satisfactorily and successfully, it is necessary that we do something outside of passing resolutions and extending votes of thanks to him for what he has done. That is very well in its way, but we should show our appreciation in a material way in order to reimburse him for what he has accomplished and to permit him to carry on the great work in the future. I do not know that it is policy for this society to do something along that line, but it seems to me we should formulate some plan by which we might interest some wealthy people who would show their appreciation of this work. For instance, there is the Carnegie fund set aside for that purpose, which was made available to help Mr. Burbank in his work, and I am satisfied if we would make the effort we could induce the people who have charge of this fund to perpetuate and carry on the work Mr. Patten has begun.

I will not take up any further time, but I will give you my plan. I think it would be well to have this society appoint a committee of three to work with a committee consisting of the same number appointed by the Iowa society, to devise ways and means to secure some material aid that shall be turned over to Mr. Patten to permit him to carry on his work in the manner he best sees fit. If Mr. Patten is left to carry the burden alone that is now upon him, I am satisfied he will be unable to carry the work to the end he desires without some material aid. We all know that he has given sixteen years of his life and most of his time towards carrying out what he has accomplished, but I am assured that he is in a position to accomplish still greater things if funds are provided that he may be able to perfect the work he has already in hand.

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I will therefore move that committee of three be appointed from this society to confer with a like committee to be appointed from the Iowa society, which is to meet next week, for the purpose of carrying out the plan suggested.

Mr. Geo. J. Kellogg, (Wis.): I wish Mr. Cashman would embrace Wisconsin in his motion.

Mr. Cashman: I shall be glad to do so, and I accept that suggestion.

Mr. Kellogg: I have thought that his renumeration ought to be from some society, some state or the United States, at least $25,000 for what he has done, and $5,000 a year as long as he is able to lift a budding knife. (Applause.)

The motion was duly seconded and, being voted on, prevailed unanimously.

The President: The chair would like to have a little time to make his selection and will announce the committee later.

The President: I will now call for the paper by Mr. Poore on the same subject presented by Mr. Kenny.

Mr. H. V. Poore, of Bird Island, then read a paper on the subject of "Treatment of Ground in Adult Orchard." (See index.)

The President: Now right along this same line we will hear from Mr. Brackett, of Excelsior.

Mr. A. Brackett, of Excelsior, then spoke for five minutes on the subject of the "Treatment of Ground in Adult Orchard." (See index.)

Discussion.

The President: The next subject is upon the harvesting of apples, and Mr. Andrews will be the first to speak upon this subject.

"Harvesting and Marketing Apples" was the subject of the paper presented by Mr. J. P. Andrews, of Faribault. (See index.)

The President: Now right after this we will have a paper by Mr. R. A. Wright.

Mr. R. A. Wright, of Excelsior, then read a paper on the subject of "Harvesting and Marketing Apples." (See index.)

The President: We have succeeded in prying Mr. Howard away from the fruit room. He likes to stay by a good thing, and he knows it when he sees it. He has some practical ideas on a good many subjects, and we hope to get some valuable pointers from him.

Mr. J. A. Howard, of Hammond, then presented a paper on the subject of "Harvesting and Marketing Apples." (See index.)

The President: The next paper will be by Mr. Warren on this same subject.

"Harvesting and Marketing Apples" was the subject of a paper read by Mr. E. C. Warren of Lake City. (See index.)

The President: We now have the general subject of harvesting and marketing apples before us, and now is the time to discuss it.

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Discussion.

The President: The next subject is that of spraying the orchard. The first paper is by Mr. Peabody, but as he is not present, his daughter, Mrs. Benton, will read the paper.

A paper on the subject of "Spraying the Orchard and Garden," prepared by Mr. E. F. Peabody, of Minneapolis, was then read by Mrs. Benton. (See index.)

The President: I know Mr. Peabody had some very fine fruit this year; I saw some of it. Now the next paper is by Mr. John Nordine.

Mr. Nordine, of Lake City, then read a paper on the subject of "Spraying the Orchard and Garden." (See index.)

The President: Mr. Spates is not present, and we will next listen to Prof. Washburn.

"Spraying the Orchard and Garden" was the subject of a paper presented by Prof. F. L. Washburn of St. Anthony Park. (See index.)

Discussion.

The President: The committee on resolutions has not yet made their report, and I will call upon Mr. Cady to make it at this time.

Mr. Leroy Cady, on behalf of the committee, then submitted the "Report of the Committee on Resolutions."

Resolved: We request our members in congress to work for the "parcels post bill" which is now before congress and which we believe the people need.

Resolved, that we are under sincere obligations to the Twin City Telephone Company for installing a telephone at our place of meeting and maintaining it without expense to the society.

Resolved, that we hereby tender our thanks to the Metropolitan Piano Company for the use of the instrument loaned for this occasion, and to the musicians whose personal services added to the enjoyment of some of our sessions.

Resolved, that our obligations are also due to P. V. Collins and to Dr. Thos. Roberts for their entertaining stereopticon exhibits and emphasizing practical facts, giving enjoyment by the aid of object lessons which are not easily forgotten.

Resolved, that this meeting has been greatly benefited by the presence of delegates and visitors from other states and societies, and we especially thank Mr. C. G. Patten for his very instructive lessons drawn from his work and also for his exhibit.

Resolved, that we extend to Hon. Geo. B. Brackett our thanks for his attendance at our meeting and for his words of encouragement. We hope to see him with us often.

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Resolved, that interest in our meeting has been very greatly enhanced by the exhibits of seedlings from other states as well as our own.

LeRoy Cady,
J. A. Howard,
Walter Yahnke.

On motion of Mr. Wyman Elliot, the report of the committee was unanimously adopted.

A large number of "Two Minute Talks" followed. (See index.)

A closing song was presented by Mr. Trafford N. Jayne.

The President: It is noted on the program that the president will make a few remarks in closing, but as the audience has largely disappeared, it would probably not be right to keep the rest.

The president will say briefly that he is under obligation to the members of the society for the kind and courteous manner in which he has been treated and to the speakers who have shown so much forbearance when he has sometimes indicated that it was time to stop, and their cheerful acquiescence to his request has added very much to the ease with which he was able to carry out the program. I am glad to say the program has been substantially carried out as designed by the officers.

On motion of Mr. Latham the meeting adjourned sine die.

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Records of Meetings of the Execntive Board in 1908.

Record of meeting held in secretary's office at 8 P. M., Dec. 2, 1907.

All the members were present.

The secretary's accounts for the period from June 25, 1907, to Nov. 26, 1907, were examined and approved, and an order ordered drawn for the amount, $558.79, on the treasurer, the same amount to be deposited by the secretary with the treasurer, leaving in the hands of the secretary the sum of $554.12.

The sum of $25.00 per month was appropriated during 1908 for educational work through the Minnesota Forestry Association.

Ten dollars was appropriated for 1908 for the use of each society trial station, the nature of the expenditures to be approved beforehand by the president, and the accounts to be paid by the secretary.

Adjourned to evening of December 5th, 1907.

WYMAN ELLIOT,
Chairman Ex. Bd.

A. W. LATHAM, *Sec'y.*

Record of meeting held at Russell's restaurant at 6 P. M., Dec. 5, 1907.

All the members being present except J. M. Underwood. Wyman Elliot was elected chairman for 1908 and A. W. Latham was elected secretary at a salary of $1,500. The salaries of president and treasurer were fixed at $25 each.

The local board was authorized to work out the details of and offer a prize not to exceed $100 per annum for a term of years for seedling apples grown from seed obtained by hand-pollination.

The sum of $75 was appropriated to pay the expenses of the attendance of Pres. Green at the National Forestry Association in Washington, D. C., in January, 1908.

Adjourned sine die.

WYMAN ELLIOT,
Chairman Ex. Bd.

A. W. LATHAM, *Sec'y.*

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Record of meeting held in the secretary's office 8 P. M., June 22, 1908.

All the members of the board were in attendance.

It was decided to locate two new trial stations, one at St. John's University, Collegeville, Rev. John B. Katzner, Supt., and the other on the farm of Seth H. Kenney, at Waterville, Minn., S. H. Kenney, Supt.

Ten plants each of the new seedling gooseberry "Carrie" were purchased of the originator, Wyman Elliot, at seven and one-half cents apiece, to be delivered to each society trial station in the fall of 1908.

The account of Geo. W. Strand, treasurer, for premiums paid at the annual meeting, 1907, amounting to $273.00 was audited and ordered paid.

The secretary's account for expenditures of the secretary's office from November 26, 1907, to June 20, 1908, was audited and allowed, and an order drawn on the treasurer for the amount, $2,787.68, the same amount being paid into the society treasury by the secretary from the receipts of his office during the period named, leaving a balance in the hands of the secretary of $603.86.

It was decided to deposit with the Board of Regents of the State University $500.00, this amount to be known as the Gideon Memorial Fund, and to be invested by them, the interest thereon only to be used annually for prizes to encourage the work of the students in the department of horticulture of the Minnesota Agricultural College at the discretion of the professor of horticulture in charge of that department. There being on hand $284.93, collected by contributions for this fund, the secretary was directed to deposit this in the society treasury, and an order for $500.00, the full amount of the fund, was ordered drawn payable to the Board of Regents.

Adjourned sine die.

WYMAN ELLIOT,
Chairman Ex. Bd.

A. W. LATHAM, *Sec'y.*

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MEMBERSHIP, 1908.

Annual Members.

A

Aarni, Frank.....New York Mills
Aanes, N. J.....Clarkfield
Abrahamson, C. W.....Warren
Abbott, Mrs. T. A.....
.....487 Ashland av., St. Paul
Acklin, Mrs. H. G.....
.....1024 Mississippi st., St. Paul
Acklin, Miss Ethel.....
.....1024 Mississippi st., St. Paul
Achatz, Chas..... Harmony
Achterkirch, Wm. C.....Nerstrand
Ackermann, A. W.....Young America
Ackerson, A. E.....Elbow Lake
Ackermann, Christ.....New Germany
Adams, W. H.....3117 1st av S., Mpls.
Adams, R. H.....Magnolia
Adsit, Dick.....Belview
Adams, A. P.....Willmar
Afdem, M. P.....Blooming Prairie
Agre, Ole H.....Sacred Heart
Agre, O. M.....Sacred Heart
Ahlstrom, John .....Spicer
Akin, D. F.....Farmington
Almquist, Chas. A.....Otisville
Alvord, W. C.....Ceylon
Allertson, M. N.....Niagara, N. D.
Alexander, Alfred.....Dawson
Albrecht, Gust C.....New Ulm
Allen, W. C.....Dexter
Alfson, A. T.....Hancock
Allen, J. H.....Walnut Grove
Allen, W. P...711 Lincoln av., St. Paul
Allen, E. M.....586 Laurel av., St. Paul
Amtsbauer, F. H.....Franklin
Ambereger, John .....Milroy
American Hort. Distributing Co...
.....Martinsburg, W. Va.
Anderson, Rev.....Fort Ransom, N. D.
Anderson, Louis .....Gladstone
Anderson, W. H.....Hawley
Anderson, J. A.....Rollag
Anderson, Wm. A.....Waseca
Andrews, J. P.....Faribault
Andrews, C. C.....
.....833 Goodrich av., St. Paul
Andrews, J. K.....Faribault
Anderson, Nils.....Lake City
Anderson, And.....Hartland
Anderson, A. L.....Hallock
Anderson, J. C. B.....
.....1285 Portland av., St. Paul
Anderson, C. M.....Kimball
Anderson, Alf. G.....Tamarack
Anderson, Nils .....Adams
Anderson, Alfred.....Clara City
Anderson, C. M.....Northfield
Anderson, J. B.....
.....Care N. Express Co., Duluth
Anderson, Erick.....Lake Park
Anderson, V. C.....Sta. F., R. 3, Mpls.
Anderson, Peter .....
.....1523 Chicago av., Mpls.
Anderson, A.....Christine, N. D.
Andree, Unis H.....Wheaton
Anderson, A. J.....Minot, N. D., R. 1
Anderson, Alfred.....New Germany
Anderson, Anton .....Winthrop
Anderson, Gudman.....Hanska, R. 2
Andrews, T. E.....
....2191 Commonwealth av., St. Paul
Anderson, Wm.....Forest Lake
Anderson, J. S.....Atwater
Antisdel, H. N.....Milford, Ia.
Andert, Fred .....Morris
Anderson, John.....Finley, N. D.
Anderson, Anton A...Browerville, R. 4
Anderson, A. V.....Goodhue
Anderson, Walfred .....Goodhue
Anderson, A. E.....Thief River Falls
Anderson, H. D.....Jackson
Anderson, C. M.....Canby
Anderson, Alfred .....Canby
Anderson, Adolph E.....Cottonwood
Anderson, Carl .....Braham
Anderson, P. A.....Clara City
Anderson, Wm..... Hendrum
Anderson, Pierce H.....Foxhome
Anderson, A. D.....Wadena
Arnold, Miss Harriet R.....
.....Meadowlands, via Alborn, Minn.
Armstrong, Geo. W.....
.....715 N. Y. Life Bldg., Mpls.
Armstrong, H. R.....Chatfield
Appletoft, Otto.....Huron, S. D.
Armitage, C. W.....Canby
Arndt, Herman.....Galesburg, N. D.
Arends, T. G.....Steen
Arms, Dr. H. L.....Hector
Anderson, S.....Rugby, N. D.
Anderson, Christ.....Sisseton, S. D.
Anticknap, H.....Regina, Sask.
Andrews, Miss Grace B.....
.....Exp. Sta., St. Anthony Park
Anderson, Alex P.....
.....5463 Wash. av., Chicago, Ill.
Anderson, Hans Geo.....Nicollet
Aschenbeck, J. H...731 4th av. N., Mpls.
Automatic Pruner Co...Williamsport, Pa.
Austwold, Nils B.....Glenwood
Aune, Martin .....Starbuck
Austin, Mrs. Mary J.....
.....103 Herald Bldg., Duluth
Avery, Mrs. A. A.....Austin
Axnes, Nels J.....Montevideo
Ayer, D. D.....Preston
Ayers, C. W.....St. Cloud
Ayers, Robt..... Foreston
Austin, O. A.....McVille, N. D.
Aune, Olof.....Underwood
Austin, L. A.....Esmond, N. D.

B

Baillif, R. L.....Bloomington
Bailey, J. V.....Newport
Bacheller, T. T.....Forest Lake
Badrann, Peter .....Harvey, N. D.
Baglaen, H. H.....Rothsay
Baasen, Erik .....Wendel
Baird, Rev. And. B.....
....247 Colony st., Winnipeg, Man.
Bailey, Frank .....Hammond
Baker, H. F....4629 Harriet boul, Mpls.

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Baldwin, H. J.....Northfield
Bancher, Geo.....Waseca
Balzer, P. H.....Bingham Lake
Ball, C. E.....Delano
Bakken, A. O.....Albert Lea
Baklund, C. A.....Willmar
Balcom, E. A.....Chatfield
Baker, E. D.....Fairmount, N. D.
Barrows, Morton....Globe Bldg., St. Paul
Bartlett, F. A...527 Guaranty Bldg, Mpls.
Barton, Mrs. Isabella.....Excelsior
Bark, S. P.....Ellendale
Bartsch, Chas. G.....Mankato, R. 2
Barton, J. R.....1717 5th av. S., Mpls.
Barringer, Stephen .....Clotho
Barkley, A.....Pipestone
Barnstad, Ole .....Willmar
Barsness, J. A.....Kenyon
Bartram, Mrs. C. S.....
.....1999 Iglehart av., St. Paul
Barthel, Wm.....Cold Springs
Bardkold, Martin .....Springfield
Barrett, A. C.....Harris
Barsness, J. J.....Evansville
Barclay, J. M.....Madison Lake
Beckley, J.....Nerstrand
Beaumier, B. R.....St. Cloud
Becker, E. W.....Excelsior
Beebe, H. U.....Lake City
Beals, W. H.....Brookings, S. D.
Bell, F. W.....2532 Nic. av., Mpls.
Beltz, J. F.....Kenmare, N. D.
Beck, Wm. M.....Ada
Becker, J. C.....Adrian
Belina, F. W.....Owatonna
Beardsley, B. F.....
....408 Am. Nat. Bk. Bldg., St. Paul
Belland, Adolph.....Malto, Mont.
Beck, Will B.....Big Lake
Beise, Otto .....Garfield
Beach, Wesley .....Excelsior
Beckman, J. W.....Cokato
Berger, Rev. A. H....Fort Ransom, N. D.
Berthelsen, Christ.....Albert Lea
Berry, J. Bert..995 Linwood pl., St. Paul
Berry, Frank.....Stillwater, Minn.
Bergh, M. P.....Madison
Berger, Geo.....Arlington
Benson, B. A.....Adams
Benson, A. O.....Blooming Prairie
Benson, M. O.....Blooming Prairie
Benjamin, J. F.....Hutchinson
Berglund, P.....Albert Lea
Bergerson, H. V.....Emmons
Berg, I. I.....Climax
Benson, Edwin .....Jackson
Bergh, N. N...Am. Exp. Co., St. Paul
Bergman, Gus.....Dawson
Berg, J. A.....Rush City
Bergland, Karl.....Comstock, Wis.
Berg, T. M.....McIntosh
Benson, Olander .....Lancaster
Berg, O. P.....Beltrami
Benett, J. C.....Boyd
Bergman, W. O.....Bottineau, N. D.
Berggren, Ernest E.....Loma, N. D.
Bergman, E. H.....Garder, N. D.
Bethke, H.....Franklin
Bewen, Orne .....Leeds, N. D.
Betz, F. A.....Boyd
Best, E. D.....409 Nic. av., Mpls.
Bates, A. N.....Excelsior
Bayard, P. C..... Eden Prairie
Bates, W. K.....Stockton
Bauer, Joe .....Westbrook
Bauleke, H. W.....Le Sueur, R. 2
Bates, Allen .....Tracy
Batho, Geo.....Winnipeg, Man., bx 1330
Baxter, Hector...4200 Park boul., Mpls.
Bisbee, John .....Madelia
Biermann, Henry .....Glencoe
Bishman, Mrs. Mary A.....Waseca
Bigelow, Mrs. F. W.....
.....4323 Dupont av. S., Mpls.
Biron, Robt. H....Court House, Mpls.
Billing, Ernest.....Lisbon, N. D.
Bishop, E. F.....Lake Park
Birch, C. A.....Willmar
Bier, Wm. G.....Brewster
Bisbee, A. J.....Excelsior
Bisbee, F. J.....
.....Malcolm & 31st av. SE., Mpls.
Billings, C. R.....Audubon
Birchard, Mrs. B. J.....Osakis
Biltmore Forest School...Biltmore, N. C.
Blackmer, R. C.....Albert Lea
Blaker, C. D.....Sta. F., Mpls.
Blanchor, C.....Sherburn
Bliesmer, C. H.....Sherburn
Blair, C. L.....St. Charles
Blakestad, L.....Lyle
Blegen, L. E.....Tyler
Blade, Levi .....Grafton, N. D.
Bluhm, A. G.....Le Sueur
Bly, C. W.....Osakis
Blanck, Irvin E.....Welcome
Blackmore, Hon. Jno. C.....
.....Christchurch, N. Z.
Bolin, J. A.....Clarissa
Bollmann, Paul .....Balaton
Boardman, F. H..537 Andrus Bldg., Mpls.
Bonin, Jno.....North Redwood
Bosshard, Herman .....Moorhead
Bothman, C. H.2124 S. Dupont av., Mpls.
Bost, A. A.....Excelsior
Boothroyd, Richard .....Alexandria
Boardman, Mrs. H. A.....
.....1336 River boul., St. Paul
Bohnsack, Chas.....Hillsboro, N. D.
Bohnsack, F. J.....New Prague
Bofferding, W. H.....
.....1423 Emerson av. N., Mpls.
Bonde, Peter .....Willmar
Bockman, C. A.....Waterville
Bolstad, Nels N.....Lake Park
Bonde, Edwin .....Adams, N. D.
Boelk, Ferd.....Lansing
Bolland, Henry.....Henning
Boss, Prof. Wm.....St. Anthony Park
Bond, Dr. Scipio.....Anoka
Boyle, M. S.....Adrian
Bowman, Dr. F. C..Palladio Bldg., Duluth
Bowman, Edward.....Kenmare, N. D.
Bowers, Merrill.....Le Roy
Bowers, D. M.....Howard Lake
Bowman, Ole J.....Fairfax
Boynton, E. W.....Rochester
Boutwell, E. E.....Kasota
Boyd, J. H.....Crookston
Boyeson, Mrs. Henry C.....
....350 Minn. St., St. Paul
Braunworth, August.....Chaska
Branson, M. L.....Fairmount, N. D.
Branson, H. E.....Shakopee
Brady, T. D.....Deerfield
Brambwold, Iver.....Grelland, N. D.
Brackett, A.....Excelsior
Brakke, A. T.....Milroy
Bragg, H. S.....Nassau
Brevig, A. L.....Starbuck
Bredlow, E. C.....Medford
Briggs, H. W.....Sanborn
Bredvold, L. L.....Belview
Breman, Mark.....Langdon
Briggs, O. P....730 Met. Life Bldg., Mpls.
Brevig, L.....Sanford, N. D.
Bren, J. B.....
Brechet, J. J.....Glencoe
Brevig, C. L.....Starbuck
Breit, G. W.....Rush City
Brevick, O.....Climax
Brown, John M.....Elk River

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Broberg, P.....New London
Brown, A. D.....Baraboo, Wis.
Broman, Aug.....Atwater
Brown, Frank .....Paynesville
Brown, Geo H.....Detroit
Brown, W. A.....Bigfork
Brown, Aug..... Winthrop
Brown, E. J.....Fergus Falls
Brown, L. S.....Larimore, N. D.
Brooks, W. W.....Long Prairie
Bryant, Mrs. Chas. M.....Sauk Center
Brown, E. J.....Kenmare, N. D.
Brown, H. H.....Monsey, N. Y.
Browning, A. R.....Brownsdale
Buggs, Wm. A.....Winona
Bull, Prof. C. P.....St. Anthony Park
Bunnell, M. C.....Newport
Buchanan, D. W.....St. Charles, Man.
Bugbie, A. E.....Paynesville
Bullis, K. E.....West Concord
Bull, J. Harry.....Sta. F., R. 2, Mpls.
Bulen, Chas. A.....Monticello
Buckler, R. T.....Crookston
Buck, John.....Fergus Falls
Bubolz, Chas..... Winthrop
Buetow, Paul.....Belle Plaine
Budd, Thomas .....Holland, Man.
Brunes, Ole .....Smiley
Brown, John A.....Windom
Brown, Max .....Tenney
Brush, Geo..... Owatonna
Brown, Ernest L.....Warren
Brown, Mrs. Chas.....Cavalier, N. D.
Brown, E. S.....Davidson
Brown, H. A.....Brownsdale
Brunkow, Chas. A.....Delano
Brodrick, Prof. F. W.....
.....Agri. College, Winnipeg, Man.
Brusoen, M. H.....Rothsay
Bruce, E. S..Forest Service, Wash., D.C.
Brown, Mrs. G. S..730 Selby av., St. Paul
Bruce, Chas. R.....Elk Point, S. D.
Brown, J. P.....Excelsior
Burkhart, J. H.....Des Lacs, N. D.
Burtness, H. E.....Caledonia
Burkitt, Alf. W.....Morden, Man.
Buro, John .....Ashawa
Burdick, E. G....139 W. 40th st., Mpls.
Bussee, H. F.....Merriam Park, R. 8
Buswell, L. A.....Bruno
Butler, Gilbert .....Mabel
Busch, Leonard .....Fulda
Butler, R. H.....Foxhome
Byholt, S. A.....Rushford
Bjornberg, J. G., 528 Mason st., Willmar
Bjornberg, Joe C.....Willmar
Bjornstead, H.....Org

C

Cairns, Miss Gertrude M., Ellsworth, Wis.
Campion, J. A.....Faribault
Cameron, G. B.....Aneta, N. D.
Cadwell, M. F.....Russell
Cale, W. H.....Canby
Campbell, J. Y.....Cypress River, Man.
Carroll, R. C.....St. Anthony Park
Carlson, C. H. (dup.).....Fertile
Carlisle, S. A.....Stacy
Carpenter, G. L.....Vermillion, S. D.
Carpenter, E. P.....Buffalo
Carr, J. P.....Bordulac, N. D.
Carlson, Ed. B.....Grove City
Cardner, A. D.....Bismarck, N. D.
Carlson, Andrew .....Imogen
Carnegie, A. E.....Alexandria
Carlson, Victor .....Grayling
Carlson, Andrew .....Grandy
Carlier, Aug.....Dodge Center
Carpenter, M. B., Hotel Aberdeen, St. Paul
Carleton, Herbert.....St. Louis Park
Carr, W. A.....Excelsior
Caswell, Arthur A.....Anoka
Catlin, T. J., M. D.....Waukenoba
Caswell, E. H.....Eden Valley
Caylor, M..... Kimball
Cederberg, Aug. S.....Barrett
Chambers, R. F.....Redwood Falls
Chase, O. C.....Fergus Falls
Chatfield, Miss L. M.....Osceola, Wis.
Chandonnet, Z. L.....Mahnomen
Chase, Bradford .....Janesville
Chatfield, Mrs. E. C.....
.....613 Fulton st. S. E., Mpls.
Chamberlain, Mrs. L. M.....
.....Sta. F., R. 3, Mpls.
Charisson, S..... Dennison
Chase, J. B.....Dexter
Chaffee, G. A.....Merriam Park
Chapman, H. H.....
.....331 Jackson st., St. Paul
Chapman, E. D.....Shakopee
Charlson, Tom .....Halstad
Chamberlain, Mrs. W. O.....
.....3352 Irving S., Mpls.
Cheney, John .....Morton
Christenson, B. P.....Hutchinson
Christie, W. A.....Badoura
Christopherson,, Nels .....Hoffman
Cheney, W. H.....Olivia
Christiansen, J. A.....Storden
Churchill, O. O.....Agri. College, N. D.
Church, A. L.....Leeds, N. D.
Christianson, P. A.....Luverne
Chinberg, C. A.....Hankinson, N. D.
Christianson, C. B.....Lansing
Chezik, John J.....Breckenridge
Christen, N. P. J.....Tyler
Christoferson, O. C.....
.....4545 Wentworth av., Mpls.
Christensen, And..... Hancock
Christensen, J. A.....McIntosh
Christiansen, Peter .....
.....180 W. 3rd st., St. Paul
Christianson, B. B.....Blooming Prairie
Clemans, E. N.....Lake City
Clausen, P.....Albert Lea
Clark H. A.....Ceylon
Clausen, Hans A.....Evan
Clark, R. J.....Eden Prairie
Clemens, E. J.....Prescott, Wis.
Clemens, John .....Villard
Centh, Carl P.....R. 2, Mound
Clarke, D. E.....Milnor, N. D.
Clemons, L. A.....Storm Lake, Ia.
Clementsen, Nels .....Fertile
Clingman, Frank .....Austin
Clementson, John .....Erskine
Clasen, Henry .....Ottertail
Clifford, H. H.....Royalton
Clapp, Geo..... Appleton
Coleman, A. B.....Bennettville
Coates, G. W.....634 Hall av., St. Paul
Colton, T. C.....Medford
Conklin, Wm..... Cambridge
Conway, Michael.....Leeds, N. D.
Colebank, E..... Madelia
Conrad, John .....Ortonville
Cole, Helmer .....Perley
Collins, Wm. S.....Wadena
Cole, W. W.....Madelia
Colvill, H. C. B.....Missoula, Mont.
Colgen, W. J.....Rosemount
Collins, Arthur H.....Ridgelawn, Mont.
Comstock, A. J.....Rochester
Connon, J. E.....Cypress River, Man.
Cook, F. L.....Spearfish, S. D.
Cooke, F. J.....Roseau
Corson, C. V.....Glencoe
Cook, Dewain .....Jeffers
Cornwell, R. M.....Eveleth
Cooper, Madison.....Watertown, N. Y.

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Cooper, Thos.....Alexandria
Cooper, C. H.....Cogswell, N. D.
Cooke, H. C.....Argyle
Copp, Fred .....Thief River Falls
Cordes, Henry .....Henning
Cornish, S. A.....Fergus Falls
Covell, Miss Janette B.....
.....220 Wash. N., Mpls.
Cowles, Fred .....West Concord
Cox, W. H.....Fairmount, N. D.
Cosgrove, L. J.....Villard
Cotton, C. H.....Larchwood, Ia.
Cowles, E. D.....Vermillion, S. D.
Coss, L. E.....Luverne
Cowan, John C.....St. Vincent
Crane, R. E.....Grand Meadow
Crane, H. E.....Excelsior
Crandall, L. V.....Red Wing
Craft, John, Jr.....Spiritwood, N. D.
Crandall, W. W.....Mpls
Crauther, A. T.....Fairmont
Cramer, Fred .....Mapleton
Craven, J. W.....Faribault
Crabtree, C. W.....
.....Milliken R., Great Falls, Mont.
Crawford, W. M.....Wahpeton, N. D.
Cressy, Jos..... Mound
Crockett, E. D....2611 Stevens av., Mpls.
Crosby, S. P.....Braham
Cross, Mrs. E.....Sauk Rapids
Crosby, Oliver...804 Lincoln av., St. Paul
Crosby, F. M.....Hastings
Crosson, J. W.....New Brighton
Cundy, W. J.....Rapid City, Man.
Cumings, Geo. W...Sta. F., R. 3, Mpls.
Cutting, Mrs.....Carnegie, Man.
Cummings, A..... Fairfax
Cuzner, E. A.....
...13th & University av. S. E., Mpls.
Cumir, J. L.....Nicollet
Currin, Pat.....
.....Milliken R., Great Falls, Mont.
Cuzinski ..... Owatonna
Currie, Mrs. E. A.....
.1973 St. Anthony av., Merriam Park
Curtis, O. H.....Osakis
Cutler, M. D., C. W.....Park Rapids
Culle, Mrs. C.....Kerrick

D

Dalos, Ole.....Fort Ransom, N. D.
Dahlen, O. E.....Albert Lea
Daliness, Mrs. H....R.F.D., Merriam Pk.
Dahl, Louis D.....Atwater
Dane, H. E.....Pine City
Danborn, Victor .....Callaway
Dale, H. J.....Renville
Danielson, Solomon .....Rothsay
Danielson, August .....Rothsay
Dakin, S. T.....Breckenridge
Danielson, H. R.....Crookston
Day, Stephen H.....Northfield
Davis, Geo. A.....Morristown
Davenport, W. R.....Dennison
Day, E. C.....Edgerton
Davis, O. H.....Madelia
Davis, Elmer .....Page, N. D.
Davis, Even J.....Garvin
Davis, Frank W.....Goodhue
Davis, Thos. J..1601 London Rd., Duluth
Daw, Wm.....Rush City
Davison, A. H.....
.....State House, Des Moines, Ia.
Davies, D. E.....Lake Crystal
Dawson, Ed. H..Daysland, Alberta, Can.
Day, F. S.....Detroit
Deline, W. F.....Cannon Falls
Decker, J. S.....Austin
Deaner, Adam .....Hopkins
Delamater, C. H.....Sta. F., R. 2, Mpls.
De Mars, G. J.....Fertile
De Lancy, E. S.....Valley City, N. D.
Delozier, D. M., 405 Main st., Minot, N. D.
Dehrer, Henry .....Mendota
De Boer, Henry.....R. 2, New Brighton
De Leeuw, C.....Glencoe
Denelsbeck, G. V.....Canby
Deming, J. K.....Parkers Prairie
De Wolf, Mrs Jessie.....
.....654 Hague av., St. Paul
Dethmars, J..... Chandler
Devine, Mrs. Frances M, Mapleton, N. D.
Detmar, Wm.....Baldwin, Wis.
Digby, J. H....901 Guaranty Bldg., Mpls.
Diethelm, M..... Victoria
Dickmann, E. J...R. 2, West St. Paul
Dickson, Mrs. P. R.....Dresbach
Dick, J. C.....Mountain Lake
Dickson, W. A.....Almena, Wis.
Dickman, D.....Elgin
Dierks, W. M.....Fulda
Dickey, E. V.....Appleton
Dickinson, W. E.....Osage, Ia.
Dillon, F. D.....Beardsley
Dokken, C. C.....Astoria, S. D.
Dobson, Wm. V.....Wayzata
Dockham, A. T.....Eagle Bend
Doepping, Wm..... Claremont
Dodds, J. E.....Wheaton
Doerfler, J. G.....Waverly
Dolson, Steve .....310 5th av. S., Mpls.
Donhill, Wm..... Lafayette
Donald, W. P.....Canton
Domrese, F. G.....Magnolia
Dokken, C. O.....Kenyon
Dow, T. J.....3117 Grand av., Mpls.
Donney, D..... Fulda
Dougerty, C. M.....Heron Lake
Doran, J. K.....Bismarck, N. D.
Doughty, R. M.....Holland
Doudna, J. M.....2517 W. 52nd st., Mpls.
Drew, Prof. Jas. M., St. Anthony Park
Drum, S. H.....Waseca
Driver, T. M.....Eden Valley
Dreekes, C. C.....Perham
Drake, Geo.....Madelia
Dunn, John W. G.....
.....1033 Lincoln av., St. Paul
Duckstad, L. K.....Fertile
Durkee, M. P.....Hancock
Durand, Albert .....Waseca
Dubbels, Jos..... Viola
Durrell, J. J.....Bigfork
Dunn, Thos. F.....Le Sueur Center
Dudley, C. J.....Albert Lea
Duncan, P. T.....Sharon, N. D.
Dunlop, B. Gibson.....Jamestown, N. D.
Duncan, Wm., Jr.....Milroy
Dufault, Peter....106 N. Main, Crookston
Duncan, Geo.....Zumbro Falls
Dunning, D. A. W., Lowry Bldg., St. Paul
Dybrig, Nels H.....Colton, S. D.
Dynes, Walter S.....
.....521 Vine st. E., Owatonna

E

Eastgate, J. E.....Larimore, N. D.
Eastman, Joe D.....Browns Valley
Earlin, John.....R. 6, St. Cloud
Early, Geo..... Fountain
Eaker, E. C.....Albert Lea
Eckberg, John .....Lafayette
Eckel, Rev. Wm.....Rogers
Eddy, P. P.....Willmar
Eddy, H. D.....Le Sueur Center
Eddy, Luther .....Ballaton
Edmunds, H..... Cedar
Edmunds, A. V.....Boyd
Edlund, E.....Detroit
Effertz, Peter .....Norwood

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Egniton, Wm..... Hayfield
Egnell, A.....Howard Lake
Eix, Gustav .....Little Falls
Ekdahl, P. W.....Otisville
Eklund, P. A.....Willmar
Eklund, E. G.....Fosston
Ekgren, J..... Buffalo
Elwin, Major Jas.....Richfield
Ellingson, S.....Sta. F., R. 4, Mpls.
Ellis, Mrs. Carrie S.....
...509 Minn. av. S., Sioux Falls, S. D.
Ellison, F. H.....Sta. F., R. 2, Mpls.
Ells, Bert .....Sherburn
Ellison, P. S.....Monticello
Elliot, John.....Marion, N. D.
Eliason, Emil .....Alberta
Elstad, J. H.....Franklin
Emerson, J. B.....
.....20 E. 30th st., New York City
Emmons, H. H.....Emmons
Emmans, N. E. H., 1736 James S., Mpls.
Endsley, P. M.....Excelsior
Enstad, L. O.....Granite Falls
Enersol, E. E.....R. 2, Elk River
Englestead, M. A. C.....Fertile
Erickson, Hans .....Beardsley
Erwin, D. A.....Waseca
Erickson, Richard .....
.....208 W. Chestnut st., Stillwater
Ericksen, J. P.....Tyler
Erickson, Even.....bx 210, Fountain
Erickson, Alex..... Tyler
Eriksen, Halgrin .....Westbrook
Erlandson, V. E.....Elbow Lake
Ericson, E. M.....Hector
Erickson, Chas. G.....New Brighton
Erlandson, Carl.....bx 17, Kennedy
Erickson, G. P.....Svea
Ersenrich, J. M.....Donaldson
Erickson, M. L.....
.....Forest Service, Wash., D. C.
Erickson, And.....Rush City
Erickson, John.....Lake Park
Esklund, Gust..... Waseca
Esau, D.....Mountain Lake
Estby, C..... Cyrus
Essig, August .....Sanborn
Ericson, G. R.....Goodhue
Erlandson, Robt.....Crookston
Englund, Oscar .....Jordan
Engle, C. H.....Harmony
Engel, A..... Morgan
Engel, Aug..... Alexandria
Engquist, John, 3645 Blaisdell av., Mpls.
Englestead, P.....Thief River Falls
Ensrud, Emil J.....Fosston
Engman, A. E.....Hallock
Enemson, C. E.....Gibbon
Engelrup, Wm..... Morgan
Evans, Merritt.....Great Falls, Mont.
Evenson, Herman .....Jackson
Evans, D. H.....Tracy
Ewald, Julius.....212 W. 26th st., Mpls.
Ewing, A. L.....River Falls, Wis.
Ewert, R.....River Falls, Wis.

F

Fairchild, H. S.....
.....209 Court Blk., St. Paul
Fallis, M. H.....Jamestown, N. D.
Fagerholt, A. A.....Hoople, N. D.
Falla, John A.....Rothsay
Fairfax, Mrs. J. F.....
.....2636 Humboldt S., Mpls.
Fagley, Mrs. H. W.....
.....457 Holly av., St. Paul
Fast, H. J.....Mountain Lake
Farnsworth, C. H.....Albert Lea
Fargo Seed House.....Fargo, N. D.
Farrar, George .....Elgin
Farrar, F. F.....White Bear
Farmer, C. R.....Ada
Farmer, E. A.....R. 2, Mpls.
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...109 Chestnut st., Philadelphia, Pa.
Featherstone, S. T.....Red Wing
Felland, L. T.....Sioux Falls, S. D.
Felling, Rud.....Browns Valley
Ferson, C. E.....South Haven
Ferodowill, F. X.....Wayzata
Ferguson, Jas. A.....Duluth
Ferguson, A. L.....
.....Truly R., Great Falls, Mont.
Felland, Prof. O. G.....Northfield
Ferguson Bros..... Luverne
Fenton, Jesse R.....Pine Island
Finstad, Jos.....Bay City, Wis.
Fish, Lawrence J., 401 Globe bldg., Mpls.
Fitzer, Chas..... Robbinsdale
Fields, J. A.....Bismarck, N. D.
Fitzpatrick, John F.....
.....Merchants Natl. Bank, St. Paul
Fitzgerald, Geo.....Gilby, N. D.
Finke, C. W.....Luverne
Fink, Christ..... Waconia
Fisher, Frank .....Gaylord
Fishback, P. L.....Monmouth, Ore.
Firle, Charley .....Fairfax
Fisher, F. A.....Arlington
Fisher, Mrs. Abbie J...Merriam Park
Fillebrom, Mrs. J. Walter.....
.....132 E. 3rd st., St. Paul
Flaig, Michael .....Sanborn
Flagstad, J.....Sacred Heart
Flannery, Geo P.....
.....2416 Blaisdell av., Mpls.
Fletcher, W. S.....Sta. F., R. 2, Mpls.
Flygare, Hans H.....Atwater
Flaig, Chas. J.....Sanborn
Floreen, Swan .....Constance
Flom, J. O.....Dennison
Fletcher, S.....Matteson, N. D.
Flint, R. F.....Bismarck, N. D.
Fiesland, M. O.....New London
Flygare, A..... Atwater
Flem, John R.....Petersburg, N. D.
Flikka, Olaus .....Shelly
Fligge, J. C.....Marshall
Fleming, Albert .....Garden City
Flaten, Prof. Nils.....Northfield
Flint, P. P.....Osakis
Flatin, A. G.....Rothsay
Flint, Henry W.....Gladstone
Flatin, G. F.....Spring Grove
Fletcher, Mrs. Eleanor....St. Louis Park
Fortin, Geo E.....813 N. Y. Life, Mpls.
Forbes, W. E.....Winnebago
Fobes, E. J.....Carrier 5, Mpls.
Foote, H. W.....Trasky
Ford, F. H.....3121 Portland, Mpls.
Foote, P. H.....St. Paul Park
Forbes, Thos.....Petersburg, N. D.
Ford, F. E.....bx 42, Glencoe
Fox, W. A.....3816 Thomas S., Mpls.
Foslin, Theo..... Garfield
Forgerson, G. A.....Rosemount
Foslien, Alfred .....Garfield
Follette, Denis .....Hastings
Fossum, I. A.....Virginia
Fockler, Louis, 366½ Selby av., St. Paul
Fossbakken, Chris .....Fosston
Fritcher, C. E.....Hancock
Frenn, P. J.....R. 6, Red Wing
Frisendahl, J. H.....Sandstone
Fritze, Leonhard .....Claremont
French, N. S.....Berlin, N. D.
Fryberger, W. M.....Pipestone
Frost, E. B.....Albert Lea
Frydholm, M.....Albert Lea
Frost, Oliver.....Harvey, N. D.
Freeman, C. H.....Zumbrota

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Freeberg, J. G.....Willmar
Frederickson, S. C.....Cobden
Freeman, Mrs. L. Aurelia.....Austin
French, John H.....Austin
French, Mrs. A. A.....
.....bx 183, Davidson, Sask.
Friedstrom, C. O.....Hallock
Frank, J. R.....3451 1st av. S., Mpls.
Fredrickson, Aug..... Lafayette
Freeman, E. M.....
.....Exp. Sta., St. Anthony Park
Fryer, W. E.....Mantorville
Fuller, E. D....3417 Longfellow S., Mpls.
Fuller, F. C.....Madison, S. D.
Fuhrmann, L. L.....Pine City
Funke, J. L.....Wabasha
Fuliton, J. C.....Fairfax

G

Galloway, J. E.....Austin
Gabrielson, C. G.....Comfrey
Galvin, R.....Grand Forks, N. D.
Gaasebeler, K. O.....Kenyon
Gaiser, John .....Worthington
Gadte, Wm.....Lamberton
Gales, G. N.....Seaforth
Garvin, A. D.....Le Sueur Center
Garfield, J. W.....Leeds, N. D.
Gaspard, J. P.....Caledonia
Gates, A. H.....Rice
Gantzer, Mrs. Daniel .....
.....R. F. D., Merriam Park
Gastfield, A. F., bx 210 R. 1, Victor, Mont.
Garder, C. G.....Bottineau, N. D.
Gardner, A. V.....Hastings
Gantzer, Mrs. J. A.....
.....Adams & Hoyt avs., St. Paul
Gerdsen, Henry .....Victoria
George, E. S.....Graettinger, Ia.
Gergen, N. B.....Hastings
Getchell, Fred. H.....Valley City, N. D.
Geis, Michael .....Jordan
Gerlach, Carl.....Red Lake Falls
Gearing, Theo.....
.....507 Lexington av., St. Paul
Gehlen, Frank .....Glencoe
George, T. M.....Hallock
Gearty, T. G.....Robbinsdale
Gerth, Wm. B.....Lamberton
Gibbs, F. H.....St. Anthony Park
Giesman, Miss Rosa B., Merriam Park
Gibbs, Miss Ida...318 Avon st., St. Paul
Gibbs, Mrs. F. H....St. Anthony Park
Giebels, Wm.....bx 85, R. 4, Mpls.
Gibson, Thos.....Glen Avon, Duluth
Gillespie, W. E.....Hopkins
Giossi, F. C.....Stillwater
Gilbertson, G. G. & Son, St. Ansgar, Ia.
Giles, M. E.....Albert Lea
Gillam, W. S.....Redfield, S. D.
Gilbert, John .....Olgo
Gimmestad, O..... Belview
Girard, Ernest .....Osakis
Gleason, M.....Sta. F., R. 2, Mpls.
Glyer, Alfred.....Forest Lake
Glaeser, Jacob .....Owatonna
Glein, Jens.....Foxholm, N. D.
Glaspell, Bernard.....Jamestown, N. D.
Gleesing, Marx.....Battle Lake
Gmeiner, Rev. John.....Springfield
Goodman, D. E.....Faribault
Godley, John G.....Albert Lea
Goffoney, John H.....Alexandria
Goodrich, C. B.....Greenbush
Goltz, John.....Havana, N. D.
Goetz, G.....1709 W. 7th st., St. Paul
Goulds Mfg. Co.....Seneca Falls, N. Y.
Gorsuch, John J.....Milnor, N. D.
Gould, J. M.....Worthington
Gove, E. L.....Madelia
Grant, John .....Wyoming
Gray, J. L., 1133 5th av. S., St. Cloud
Grant, Mrs. I. J.....
.....731 Ashland av., St. Paul
Graham, W. J., M. D., Walhalla, N. D.
Graham, W. J., Jr.....Anoka
Grant, Eugene .....Moorhead
Grand Forks Seed Co.....
.....Grand Forks, N. D.
Gray, Clifford A.....Donnybrook, N. D.
Gray, A. E.....Preston
Grasselli Chemical Co.....St. Paul
Graves, Mrs. W. F.....
.....779 Summit av., St. Paul
Graham, Dr. C.....Rochester
Gray, F. H.....Jackson
Grabow, Fred.....Seaforth
Grant, John.....Lumsden, Sask.
Graham, M.....Holland, Man.
Green, Prof. S. B.....St. Anthony Park
Grem, Q..... Elgin
Greaza, A. E.....R. 4, St. Paul
Gregory, Wm. T.....Beach, N. D.
Gregory, Henry .....Jordan
Grefe, Herman .....Ottertail
Greely, A. M.....New Rockford, N. D.
Green, Will..... Morgan
Groat, H. G.....Anoka
Grimm, Ben.....707 E. 3rd, Duluth
Grimes, E. E.....Northfield
Grover, C. A.....Glyndon
Grover, O. J.....Glyndon
Grussendorf, D. A.....Jordan
Groff, Ed..... Dundee
Griffith, G. H.....Wells
Grose, Fred S.....Danube
Griffin, John .....Kennedy
Grift, Peter .....Cambridge
Gruhlke, Wm..... Jackson
Grover, Silas .....Waterville
Grif, Jacob.....St. Leo
Groers, L. A.....New York Mills
Grout, T. P.....Luverne
Guler, Stephen....New Rockford, N. D.
Gunderman, H..... Wabasha
Gudvangen, B.....Albert Lea
Guosman, Wm.....Morris
Gusa, George.....Middle River
Gulseth, Martin .....Climax
Gulden, Rhenold .....Milroy
Gunhus, G. E.....Fosston
Gulbertson, E. K.....Garfield
Gulleckson, C. J.....Beltrami
Gutridge, A. W.....
.....Associated Charities, St. Paul
Gynild, Rev. E. E.....Willmar

H

Hacklander, Wm.....Blue Earth
Hagen, Carl .....Glencoe
Hakanson, John .....Bertha
Hagen, S.....Waseca
Hagen, J. L.....Chandler
Haefla, A..... Jordan
Hagen, D..... Dexter
Hageman, J. W.....Langdon
Hains, F. J.....Sorkness, N. D.
Haag, Nels .....Rock
Haack, Otto .....Seaforth
Habein, A..... Morristown
Haarstad, Jerr.....Fergus Falls
Haarala, S. J.....New York Mills
Haberman, John M.....Monticello
Hagen, O. J.....Hendrum
Hagen, H. M.....Granite Falls
Hadley, Emerson .....
.....123 Farrington av., St. Paul
Halstad, J. L.....Appleton

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Halmerud, Eric .....R. 3, Duluth
Halford, Dan M.....Boulder, Mont.
Hall, Mrs. A. L.....
.....5th & St. Peter sts., St. Paul
Hansen, Chris.....bx 243, Albert Lea
Hamilton, Geo. H.....
.....1065 Ottawa av., W. St. Paul
Hansen, Loring .....Evan
Hanson, Emil .....Ryder, N. D.
Hamann, S. A.....Great Falls, Mont.
Hanson, J. G.....Kasson
Hansen, H. A.....Zumbrota
Hanson, Wm..... Clarissa
Hansen, J. R.....Brownsdale
Hanson, Edward .....R. 1, Milan
Hankland, And..... Rothsay
Hansen, Chris .....Rothsay
Hansen, C. L.....Fertile
Hancock, Mrs. F. A.....Morris
Handy, A. M.....Granada
Hammer, M. E.....Helberg
Hansen, Jes.....Culbertson, Mont.
Hanson, Jas F.....Fertile
Hansen, H. F.....Albert Lea
Hanson, Frank O.....Parkers Prairie
Hamnstrom, C. J.....New Brighton
Hanchett, W. H.....Sparta, Wis.
Hansen, C. N.....Rush City
Hanson, A. L.....Ada
Hanson, Simon J.....Ball Club
Hanson, J. B.....Anoka
Hanson, G. L.....Elkton
Hanson, J. P.....Church's Ferry, N. D.
Hartman, F. E.....Minneiska
Hart, E. W.....Madison, S. D.
Haseltine, E. W.....Grand Forks, N. D.
Harley, Hugh.....Swan River, Man.
Harrison, J. R.....Eden Prairie
Harrison, J. F.....Excelsior
Haralson, Charles.....Excelsior
Harrison, F. M.....Glenwood
Harmegmes, Mrs. E. P. C.....
.....972 Portland av., St. Paul
Harrison, W. H.....Le Roy
Harrison, Geo.....Petersburg, N. D.
Harmon, Milton H.....Geneva, N. Y.
Hart, Geo. W.....Northwood, N. D.
Haseman, Henry H.....Butterfield
Haseltine, Frank T.....Crookston
Harbaugh, Fred.....White Bear
Harrington, C. L.....Ayr, N. D.
Hassler, Frank .....Perham
Hart, W. W.....Delavan
Hartmann, Frank .....Iona
Harkness, W. L.....Northfield
Hawkins, Alf. O.....Wayzata
Haynes, Prof. A. E.....
.....703 St. Anthony boul., Mpls.
Hatfield, M.....St. Charles
Hawkins, John.....bx 495, Mpls.
Hawkins, Mrs. John.....bx 495, Mpls.
Hathaway, C. E.....Northfield
Hatch, Albert.....Sauk Center
Hattenberger, Fr..... Shakopee
Haugen, P. P.....Blooming Prairie
Hatledal, Ole O.....Benson
Hawkins, J. C.....Austin
Hawkes, A. S.....Waseca
Hayden, W. C.....Lansford, N. D.
Hawkinson, Arthur W.....Center City
Hawkins, R. H.....Houston
Hauge, Thor..... Germantown
Havill, O. B.....St. Cloud
Hayer, Edward.....Blue Earth
Hawkins, F. C.....White Bear Lake
Healy, G. B.....Sioux City, Iowa
Helfort, E. A.....Stillwater
Heins, C. A.....Olivia
Hegge, Ole .....Adams
Heimark, J. H.....Warwick, N. D.
Heath, Fred.....Fargo, N. D.
Hellesheim, H. G.....Sleepy Eye
Hearding, J. H.....Eveleth
Heller, C. T.....33 S. 10th st., St. Paul
Hecht, Mrs. Geo.....Morristown
Helmer, S. O.....Buffalo
Hegdahl, H. B.....Belview
Helizen, C. A.....Clarkfield
Henneker, W. S.....
.....3113 Pleasant av., Mpls.
Hemmelgarn, Jos. B.....Perham
Hendrickson, Frank .....Malcolm
Hendrickson, H. C.....Hartland
Heneke, Ida.....Wood Lake
Henry, Earle S.....Montevideo
Hendricks, J. A.....Fosston
Hemstad, M. A.....Montevideo
Hendrickson, Prof. H. N.....
.....713 21st av. S., Mpls.
Hendryx, Sv. R.....Austin
Hendrickson, Aug..... Oslo
Hendrickson, Miss Hilda.....Warren
Hess, Jacob .....Lamberton
Hesselgrave, R. V.....Winnebago
Heuring, Kilian .....Elk River
Heuring, David .....Elk River
Hermanson, O. J.....Albert Lea
Hermanslie, Lars.....Abercrombie, N. D.
Hewitt, A..... Nassau
Herbrandson, O.....Brooten
Hetler, J. F.....Crookston
Heywood, W. T.....Manhattan, Mont.
Harris, Geo. W.....McHugh
Harris, Mrs. A. H.....Bemidji
Hartwell, Ezra .....Magnolia
Harrah, Mrs. J. W.....
.....3027 Clinton av., Mpls.
Harland, Frank.....Drake, N. D.
Hart, A. M.....Fergus Falls
Hartman, M. D.....661 Plum st., St. Paul
Highby, L. P. H.....Albert Lea
Hibbs, D. R. P.....Albert Lea
Hill, L. A.....Winnebago
Hidde, Fred .....Herman
Hildremyr, J.....Petersburg, N. D.
Hiliger, Rev. Aug.....Boyd
Hilleboe, Prof. H. S.....Benson
Hilborn, E. C.....Enderlin, N. D.
Hickerson, W. N.....Long Prairie
Hildahl, Olaf .....Greenbush
Highmark, L. P.....W. Duluth
High School .....McIntosh
Hill, Rev. C. J.....Underwood
Hintermister, J. Henry.....
.....205 Dispatch Bldg., St. Paul
Hintz, George .....Claremont
Hinkley, C. N.....Osseo
Hitchcock, Mrs. P. D.....Redwood Falls
Hinkley, R. B.....Luverne
Hjermstad, Morten .....Ballaton
Hofflin, Jos. J.....Hopkins
Hogestande, Erik .....Madella
Hoar Bros.....Grove City
Hoecker, Prof. F. L...St. Anthony Park
Hobkirk, James .....Ballaton
Hohman, W..... Seaforth
Hodgson, Thos.....Elbow Lake
Holliday, Dr. E. R.....Ellsworth, Wis.
Hone, Miss Daisy.....
.....1034 15th av. S. E., Mpls.
Holmberg, J. E.....Avoca
Holman, John .....Marietta
Homme, Ole O.....Heron Lake
Holmgren, P. O.....Hoffman
Holmes, J. L...Pittsburg Coal Co., Mpls.
Holton, Theodore.....Larimore, N. D
Holm, M. O.....Iona
Holmberg, J. W.....Avoca
Hoover, L. F.....Kensal, N. D.
Holesik, Winslow .....Hopkins

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Holes, James .....Fargo, N. D.
Holt, John E.....Carver
Honglum ..... Audubon
Holmberg, A. P.....Hallock
Holland, Rasmus.....Hanley Falls
Holm, Melvin.....Parkers Prairie
Hooker, A. E.....White Bear
Hoople, Allen.....Hoople, N. D.
Holt, Mrs. H.....3708 Upton S., Mpls.
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Howland, F. B.....Northfield
Horton, W. H.....Alexandria
Hovet, A..... Monterey
Howlett, Mrs. D. D.....Oshkosh, Wis.
Hoyt, B. T.....Hamline, St. Paul
Howard, G. R.....Collis
Hougen, T. O.....Nicollet
Hovland, Edwards .....Emmons
Hoss, Mrs. N.....Fertile
Howard, J. R.....White Earth
Hovland, J. O.....Fertile
Horejsi, Frank .....N. Redwood
Hopkins, Frank .....Fairfax
Hopwood, J. E.....Maxbass, N. D.
Howard, J. H.....Glenburn, N. D.
Hornby, H. C.....Cloquet
Howard, F. A.....Pine Island
Hopper, S. T., 1901 22nd av. N. E., Mpls.
Hulbert, C. S.....City Hall, Mpls.
Huber, Frank .....Shakopee
Huestis, Dr. O. M., 400 Central av., Mpls.
Hubbard, Mrs. E. B.....
.....93 Cambridge av., St. Paul
Huff, Theo. A.....Fergus Falls
Hull, D. H.....Litchfield
Hughes, John S.....
....218 Hutton Blk., Spokane, Wash.
Huffman, H. I.....Amboy
Hughes, B. C.....Le Sueur Center
Hueblein, George .....Lewiston
Hummel, John A.....
.....Exp. Sta. St. Anthony Park
Huston, H. A.....
.....562 Monadnock, Chicago, Ill.
Hurst, John H.....St. Peter
Husser, Henry .....Minneiska
Hurtt, Wm.....Hoople, N. D.
Husting, L. P.....Hastings
Huseby, A. A.....Adams
Hurtig, Walter W.....Carver
Huntington, H. G.....Hopkins
Husby, Gunner .....McIntosh
Hutchinson, W. H.....Eagle Bend
Hutchins, F. J.....Huron, S. D.
Huskins, V. E.....Ellendale, N. D.
Hunt, Mrs. H. L.....Sta. F., Mpls.

I

Innis, Geo. S.....Hamline, St. Paul
Irle, Edwin.....206 S. 3rd st., Mpls.
Irwin, Mrs. D. O.....Lake City
Ingebretson, Lewis.....Lake Park
Ingalls, J. E.....Waltham
Imm'e, Emil.....Albert Lea
Imme, Wm.....Albert Lea
Iverson, A.....Emmons
Irvine, Geo..... Owatonna
Iverson, Ole .....Jackson
Iverson, Iver .....Fergus Falls
Innes, J. C.....Luverne
Isaacson, C. W.....Armstrong, Ia.
Ives, W. S.....Annandale
Ingersoll, J. F.....Crookston
Isker, John J.....Waseca
Irwin, E. F.....Sta. F., R. 1, Mpls.
Irwin, H. W.....Stillwater

J

Jager, H. J.....Owatonna
James, Geo. W.....Forest Lake
Jacksen, Peter .....Cloquet
Jacobson, H..... Triumph
Jacobson, Martin.....Pierpont, S. D.
Jarchow, George .....Stillwater
Jager, Rev. Francis.....
.....1410 8th st. S., Mpls.
Jasperson, L. W.....Albert Lea
Janzen, Abr.....Mountain Lake
Jacobson, A. L.....R. 7, Montevideo
Jaquith, O. O.....R. 3, Hopkins
Jack, Nathan .....Blakely
Jackson, H. B.....Starbuck
Jamison, Jas.....Kennnedy
Jacobson, J. B.....Porter
Jackson, P. T.....1722 Summit, St. Paul
Jackson, Adolph .....McIntosh
Jacob, L. M.....Sebeka
Jamison, W. A.....Warren
Jacobson, John .....Franklin
Jacobson, Anton .....Rothsay
Jacobson, P. G.....Madison
Jardine, S. D.....Sauk Center
Jardine, J. B.....R. 3, Wayzata
Jensen, N. C.....Wyndmere, N. D.
Jedlicka, Henry .....Clarissa
Jensen, Jens A.....Rose Creek
Jefferson, Lucy E.....Bingham Lake
Jensen, Anton .....McIntosh
Jensen, Geo. C.....St. Louis Park
Jensen, And. P.....St. Louis Park
Jennings, G. W.....Albert Lea
Jensen, Adolph, 3317 17th av S., Mpls.
Jensen, C. M.....R. 3, Albert Lea
Jensen, Halger.....R. 3, Albert Lea
Jensen, Wm.....R. 6, Albert Lea
Jensen, Mrs. Aug.....Browns Valley
Jenks, W. R. S.....Wells
Jensen, T. P.....Little Falls
Jensen, J. P.....Morgan
Jensen, J. P.....R. 1, Dodge Center
Jensen, Theodore .....Partridge
Jefferson, L. C.....
.....1126 Summit av., St. Paul
Jickling, Mrs. Lemon.....Morden, Man.
Johnson, Gottfried.....Velva, N. D.
Johnston, John, 1315 Beech st., St. Paul
Johnson, J. P.....Excelsior
Johnson, John .....Tyler
Johnson, C. E.....Atwater
Jonson, C. J.....R. 1, Lafayette
Johnson, Jens J.....Windom
Johnson, C. A.....Henning
Johnson, B. G.....Granite Falls
Johnson, O. S., 1823 Fallula av., St. Paul
Johnson, James .....Sherburn
Johnson, Gust J.....Clarissa
Johnson, N. C.....Adams
Johnson, A. C.....Leeds, N. D.
Johnson, Mark.....Petersburg, N. D.
Johnson, C. I.....Austin
Johnson, A. J.....Milan
Johnson, T.....R. 2, Milan
Johnson, E. C.....Mandan, N. D.
Johnson, Gust.....R. 2, Kenmare, N. D.
Johnson, Aug.....R. 2, Lafayette
Johnson, Andrew.....Hanska
Johnson, J. E.....Svea
Johnson, Andrew...bx 25, R. 5, Renville
Johnston, R. H.....North Branch
Johnson, I. M.....Cottonwood
Johnson, Carl E.....Pelican Rapids
Johnson, Dr. A. E.....Cloquet
Johnson, N. P.....Russell
Johnson, J. C.....Hendricks
Johnson, E. C.....Hendricks
Johnson, J. A.....Manfred, N. D.
Johnson, John A.....R. 2, Waseca
Johnson, O. G.....Drayton, N. D.
Johnson, Harold J.....Greenbush
Johnson, Oscar H.....R. 2, Svea

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.....625 N. High st., Lake City
Johnson, P. E.....North Branch
Johnson, J. W.....Stanchfield
Johnson, Isaac A.....Braham
Johnson, Mrs. J. T.....Coon Valley, Wis.
Johnson, C. J.....Pennock
Johnson, Nels E.....bx 47, Appleton
Johnson, L. S.....Fosston
Johnson, Reuben A.....Hallock
Johnson, Carl .....Foreston
Johnson, H. C.....Rothsay
Johnson, R.....Osakis
Johnson, Olof .....Bricelyn
Johnson, R. M.....Round Prairie
Johnson, David .....Kasota
Johnson, Bennie .....Ashby
Johnson, Robt.....Fullerton, N. D.
Johnson, Victor .....Hallock
Johnson, Otto C.....Otisco
Jones, L. G.....Troskey
Jones, D. B.....Windom
Jones, J. H.....Luverne
Joyce, James .....Grand Meadow
Jordeshangen, Leif .....Germantown
Jones, Thos. C.....Russell
Jorgenson, I. B.....Hutchinson
Jorgens, Sven .....Elbow Lake
Jones, Dr. M. S.....Battle Lake
Julin, John H.....Otisville
Jurgensen, Stephen.....Kenmare, N. D.
Jugberg, P. O.....Hendrum

K

Kanning, E. H.....R. 1, Fairmont
Kaemmer, Henry .....Albert Lea
Kahle, Martin .....Gladstone
Katzner, Rev. Jno. B.....Collegeville
Karels, Jos..... Ortonville
Kaspari, Jacob .....Anselm, N. D.
Kapler, G. R.....Perham
Kaer, N. C.....3856 36th av. S., Mpls.
Kamholz, Gust .....Evan
Kato, J.....New York Mills
Kauth, Jacob.....R. 2, Robbinsdale
Kaffang, O. H.....Crookston
Kelso, J. P...2745 Clinton, av., Mpls.
Keith, John A.....bx 98, Bayfield, Wis.
Kellogg, L. L.....Janesville, Wis.
Kelly, Clark W.....Devils Lake, N. D.
Keasling, F. J.....Zimmerman
Kelsan, C. H.....Tyler
Kellogg, F. A.....Red Lake Falls
Keen, C. G.....New Richland
Keil, Albert .....Springfield
Keil, Rev. J. H.....Wayzata
Kelson, George .....Tyler
Kelsven, A.....Gentilly
Ketchem, C. S.....Brook Park
Key, C. L.....502 N. 5th st., St. Peter
Kennedy, John .....Lake City
Kennedy, Daniel .....Biscay
Kern, Harry...Exp. Sta., St. Anthony Pk.
Kemp, Harald.....Rapid City, Man.
Keyes, E. A.....Excelsior
Ketcheson, Melville.....Milnor, N. D.
Kern, O. J. A.....R. 5, Stillwater
Kenyon, J. M.....Lamberton
Kemp, J. A.....Bottineau, N. D.
Kinghorn, W. A.....Rogers
Kimball, F. W.....Austin
Kingsley, A. W.....Bricelyn
Kimball, Rev. J.....R. 1, Duluth
Kinkade, W. S.....Sioux Falls, S. D.
Kibler, Charles .....Bellingham
Kilpatrick, W. M.....Faribault
Kinsman, A. N.....Austin
Kinney, Tillie.....Philip, S. D.
Kinder, L. B.....Bay Lake
Kjolhong, T. E.....Fosston
Kjerland, O. N.....Northwood, Ia.
Kjorstad, G. H.....Glenwood
Klemp, Rev. H. R.....Raymond
Klasvik, Iver S.....Underwood
Klussman, Ed. C.....Welcome
Klindt, Christ.....Hustad, Ia.
Kleberg, John.....R. 2, Willmar
Klukow, H. C.....Albert Lea
Klebs, J. C., Jr.....Bertha
Klevann, Paul P.....Starbuck
Knowles, Mrs. M. A.....Excelsior
Knudsen, A. C.....Westbrook
Knowles, John .....Jeffers
Knudson, Kittel .....Hartland
Knowlton, Geo. W.....Cannon Falls
Knudson, K. G.....Beardsley
Knudson, Clause.....Beardsley
Knutson, L. H.....Lake Mills, Ia.
Knight, E. W.....
.....1202 N. 6th st., Estherville, Ia.
Knudson, J. M.....Waterville
Knutson, J. C.....Heron Lake
Knauss, J. C.....Morristown
Knudson, Rev. P.....New Duluth
Knuppel, Fred.....Cedar Lake
Knutsen, Paul .....Fertile
Komstadius, H. A.....Hoffman
Kolisch, Aug.....St. Louis Park
Kockmann, J..... Belgrade
Kochendorfer, K.....South Park
Kohler, A. R.....St. Anthony Park
Kovar, Wansel .....Owatonna
Kording, John .....Hayfield
Kochly, J. C.....Dundee
Koehler, D..... Hector
Korsvik, A. H.....Prosser, Wash.
Kolbert, John.....bx 508, Mankato
Krueger, John.....R. 6, Stillwater
Krueger, Mrs. A. C.....Eden Prairie
Krall, John.....Lake Benton
Krogman, Henry .....Crookston
Kramer, Theo..... Dexter
Krause, Mrs. Chas...R.F.D., Merriam Pk.
Kroening, Herman.....St. Charles
Kreisel, F. A.....Boyd
Kriesel, L. C.....Houlton, Wis.
Krenz, Frank.....Parkers Prairie
Kuhl, C. C.....White Bear
Kuske, C. A.....Olivia
Kvien, And..... Fosston
Kough, Thos.....Taopi
Korsmo, Soren A.....Franklin
Korth, Aug..... Rothsay
Korth, Albert .....Rothsay
Kohler, Geo. F.....Deer Creek
Kohler, F. X.....Glencoe

L

Lake, A. H....Black River Falls, Wis.
Lambert, R. R.....Rush City
Lamn, Albert .....Springfield
La Mont, Scott.....Jarretts
Lamb, Chas., Sr.....Baker
Laage, E. A. E.....Osakis
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Larson, Peter.....Albert Lea
Lane, J. W.....Anoka
Larson, J. Th.....St. Louis Park
Larson, J. F.....Stillwater
Larson, Arne H.....
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Larson, Jalmar.....R. 1, Spicer
Larson, Mons .....Tyler
Larson, Gust.....R. 3, Braham
Larson, L. N.....Lowry
Lane, David.....Crystal, N. D.
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Lawrence, Jas. G.....Wabasha
Lawe, J. W.....Fairmont
Lavik, E. J.....Rugby, N. D.
Laughlin, Mrs. Q. E.....Fridley
Lawrence, M. D.....Hallock
Latta, W..... Crookston
Larsen, C. F.....Morgan
Landro, Jens N.....Hendrum
Larson, L. T.....Garfield
Larson, Sward .....Rothsay
Larson, Lewis.....Perley
Larson, Oliver .....Spicer
Larson, Mrs. L. O.....R. 2, Balaton
Lange, Ed.....191 Maria av., St. Paul
Leach, A. D.....Excelsior
Lee, Geo. F.....Underwood
Le Gro, H. O.....Bertha
Leik, Nick .....Madèlia
Lehmann, Aug..... Sherburn
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Leath, Fred .....Cleveland
Leary, D. J.....Browns Valley
Leding, Edward .....Flaming
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Leibrand, Jacob .....Jordan
Lee, N. H.....Dexter
Lee, Mrs. Thos. G.....
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Leiner, Daniel .....Morris
Lee, Henry T.....Fingall, N. D.
Ledermann, Alvons.....Perham
Leavenworth, Prof. F. P.....
.....1628 4th st. S. E., Mpls
Leider, E. H.....Zimmerman
Lee, S..... Alexandria
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Leonard, Dr. L. D.....
.....Donaldson Bldg., Mpls.
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Lewis, K. W.....Minong, Wis.
Lester, Irwin.....Alpha
Lepine, W. E.....Welcome
Lende, Carl.....Cooperstown, N. D.
Lewis, Bert.....Caledonia
Leng, Rudolph.....Adrian
Lewis, E. J.....Jackson
Lewis, Judge C. L...St. Capitol, St. Paul
Linhoff, Jos. C.....Shakopee
Lindsay, J. M.....Austin
Livingston, R. C.....Spring Valley
Linder, Jacob, Jr.....Easton
Lian, T. O.....Borup
Libby, F. M.....Robbinsdale
Lindsay, F. F....25 Seymour S. E., Mpls.
Lindblad, John.....Svea
Lissan, R. H.....Ivanhoe
Lindquist, E. P...104 Phoenix Bldg., Mpls.
Linden, Anton .....Fisher
Lindquist, John.....Granite Falls
Lizotte, John.....Omemee, N. D.
Lidenberg, H. A.....Fosston
Lien, Harry A.....Montevideo
Lindley, Isaac C.....Amboy
Lisland, K. W.....Sebeka
Lilleskov, John S.....Stanton
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Lilygreen, Mrs. Frank.....
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Lindberg, Christ .....Beltrami
Lindblad, Aug.....Climax
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Lightner, Mrs. W. H.....
.....318 Summit Ave., St. Paul
Locke, A. W.....Dodge Center
Longfellow, Levi...1808 Vine Place, Mpls.
Loss, H. R.....Clara City
Lortz, Albert .....Mankato
Lowe, L. H.....Clotho
Long, A. G.....Excelsior
Loegering, Aug.....Long Prairie
Long, F. B.....830 Henn. Ave., Mpls.
Lostegnard, N. E.....Lansing
Lokke, Martin.....Grand Meadow
Lowe, M. F.....Buffalo
Loftness, A. G.....Thief River Falls
Lovold, E. J.....Mpls.
Lommen, Ole O., Jr.....Lengby
Loose, F. W.....Luverne
Loken, Ellef.....Millard, S. D
Ludlow, J. B.....Rushmore
Luing, F. J.....Porter
Luker, Chas..... Waterville
Lund, A. J.....Boyd
Luedees, H. W.....Ottertail
Lund, M. B.....Henning
Luchan, H. J.....Fertile
Lucken, K. J.....Portland, N. D.
Lundholm, Dr. E. M.....
.....677 Univ. Ave., St. Paul
Lumburg, Fred..... Mapleton
Ludvig, Mrs. A. W.....
.....1801 Humbolt S., Mpls.
Luce, C. L.....Albert Lea
Lundgren, Mrs. E. E....R. 3, Cannon Falls
Lykken, C. T.....Dennison

M

Magnusson, Sven .....Harris
Manz, H. J.....Paynesville
Manz, F. W.....Paynesville
Mahler, Adolph .....Waseca
Madsen, Christ.....Clarks Grove
Magnuson, J. E.....
...423 Wilson Ave. S. E., E. St. Cloud
Magie, Dr. W. H.....
.....613 Lyceum Bldg., Duluth
Mackey, Mrs. Jos. S.....
.....Pioneer Press Bldg., St. Paul
Mainz, Simon .....Hastings
Malmberg, E. W.....Lafayette
Mann, C. O.....Owatonna
Manning, J. R.....Booge, S. D.
Mager, W. W.....Stanton
Malmsten, F. W.....
.....2117 Western Ave., Mpls.
Mahony, D. J.....Winona
Manders, Michael.....Minnesota Lake
Malloy, Thos..... Skyberg
Mahlberg, Alf..... Worthington
Malm, Wm.....Argyle
Madsen, J. P.....Fergus Falls
Maack, F. H.....Rothsay
Malingen, Alfred.....Lawndale
Martin, E. E.....Claremont
Marion, C..... Villard
Marden, Ezekiel .....Ashby
Marsh, P. J.....Buffalo
Mareck, Titus.....315 1st Ave. S., Mpls.
Martin, John.....Chaffee, N. D.
Marks, F. C.....Marshall
Martinson, Harold.....Milnor, N. D.
Mark, John P.....Goodhue
Marso, J. P.....Canby
Mardans, J. W.....Stillwater, R. 9
Markland, L. C.....Lansford, N. D.
Marsh, F. L.....Champlin
Manderfeld, Henry.....New Ulm
Malakonsky, John .....Lockhart
Malm, A..... Argyle
Macoun, W. T., Exp. Farm, Ottawa, Ont.

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Mattson, C. G.....Chisago City
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Mathisen, Geo. W.....Windom
Mathews, Mrs. Jas. H....Larimore, N. D.
Mason, C. M.....Lake Park
Masterson, C. H.....Pennock
Mather, O. R.....Madelia
Matter, J. P.....Lamberton
Maschger, A. F...859 E. 7th St., St. Paul
Mayhus, Ben.....Beardsley
Mattson, J. P.....Warren
Meininger, L..... Sherburn
Mercer, S. F.....Larimore, N. D.
Merchant, M. F.....Ellendale, N. D.
Menzel, H..... Odessa
Merritt, C. W.....Winona
Melgaard, H. L.....Argyle
Means, C..... Preston
Meger, Henry .....Melrose
Meisure, Henry .....Taunton
Meierding, H. F.....Morgan
Melond, J. K.....Fosston
Melwood, A. E.....Fairfax
Meissner, Albert .....Brandon
Meyer, Henry.....Blue Earth
Meyer, W. G.....Elgin
Meyer, J. C.....Blooming Prairie
Meyer, H. M.....Montgomery
Meyers Bros..... Donnelly
Meyers, F. W.....St. James
Miller, E. B.....R. 1, Sta. F., Mpls.
Miks, Rev. A.....St. Michael
Mills, R. W.....Litchfield
Mills, L. D.....Lake Crystal
Miller, J. K.....Sauk Rapids
Miller, Mrs. Alda M.....Wheaton
Mitchell, C. W.....Edgerton
Mills, W. E.....Dawson
Minsaas, E. O.....Maynard
Mitchell, John .....Clearwater
Miller, Fred .....Wells
Millard. F. B.....Willow River
Mills, G. R.....Buffalo
Miller, A. G.....Sherbrooke, N. D.
Miller, S. O.....Lakeville
Milne, H. A.....Meckinock, N. D.
Mighton, S. R.....
105 Birds Hill, Rd. E, Winnipeg, Man.
Millard, Frank E.....Canby
Miles, L. O.....
2129 Langford Ave., St. Anth. Park
Mitchell, D. M.....Owatonna
Misfeldt, C. C.....Ellendale, N. D.
Miller, H. J.....Cologne
Michelsen, John .....Luverne
Miller, Carl .....Fosston
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Miller, A. M.....Harmony
Miner, J. E.....3022 Dupont S., Mpls.
Miller, E. J. D.....Barlow, N. D.
Mitchell, Mrs. M. M.....
.....307 W. 15th St., Mpls.
Mohl, Fred .....Adrian
Moeser, Frank.....St. Louis Park
Moe, I. T.....Montevideo
Moeser, Miss Mary.....St. Louis Park
Montana Nursery Co.....Billings, Mont.
Moody, H. L.....Excelsior
Moore, O. W.....Spring Valley
Moot, Mrs. A. T....3723 W. 44th St., Mpls.
Moehlenbrock, Ed.....Park, N. D.
Moen, H. H.....Halma
Moe, G. A.....Fisher
Moore, W. L.....
.....Forest Service, Wash., D. C.
Moeser, Miss Flora.....St. Louis Park
Moklev, M. S.....Battle Lake
Moberg, Aron .....Lowry
Monson, Mons.....R. 1, Drayton, N. D.
Morton, C. H.....St. Louis Park
Morrison, Rev. J. D.....
.....2131 E. Superior St., Duluth
Moran, Father.....
.....Holy Rosary Church, Mpls.
Morton, R..... Lamberton
Morrison, Frank.....Philip, S. D.
Moore, Chas E.....Valley City, N. D.
Mortenson, R. J.....Tyler
Morgan,, H. L.....Bradley, S. D.
Moris, Mrs. Frank.....Lake Elmo
Moses, Mrs. W. S.....Box 95, Tracy
Moulton, H. R.....Windom
Mosher, M. J.....Park Rapids, Minn.
Moyle, J. C.....Braham
Munch, Mrs. Marie.....Crookston
Munroe, Hugh .....
.....Clarkson Coal Co., St. Paul
Munk, P..... Bixby
Mundt, Fred.....Heron Lake
Munduller, H. E.....Ortonville
Mullen, L..... Campbell
Munney, R..... Burr
Mullin, P. T.....Hutchinson
Mueller, Ferd.....Park Rapids
Mudge, Mrs. F. L..1411 Vine Place, Mpls.
Mull, Mrs. W. H.....R. F. D., White Bear
Murray, D. L.....Blooming Prairie
Murray, Mrs. Emma M.....Excelsior
Murray, J. W.....Excelsior
Murray, G. W.....Bordulac, N. D.
Murray, Geo. B.....Cando, N. D.
Myrah, E. G.....Spring Grove
Myhre, Albert J.....Kindred
Myckleyord, O. R.....London
Myhen, Nels.....Thief River Falls

Mc

McBroom, J. K.....Excelsior
McConnell, J. O.....St. Cloud
McCabe, B. S.....Le Sueur Center
McCullough, Francis.....Maple Plain
McClung, Miss A. V.....
.....630 Globe Bldg., St. Paul
McCabe, Mrs. M.....Sta. F., Mpls., R. 1
McConnell, W. W. P.....Mankato
McConnell, C. L....Church's Ferry, N. D.
McCarty, Ed..... Madelia
McCarty, Oscar..... Madelia
McCoy, Mike .....Dexter
McConachie, N.....Perham
McCurdy, J. B. K.....Madelia
McComks, Geo. M.....Hewitt
McCulloch, Geo.....Killarney, Man.
McDonald, Mrs. M.....
.....2202 Blaisdell Ave., Mpls.
McDonald, W. M.....Excelsior
McDonald, John H.....Davidson
McFadden, Wm.....Fergus Falls
McGeough, Bernard.....Kilkenny
McGuire, S. H.....Annandale
McIlroy, E. G.....Glenburn, N. D
McIver, S..... Farwell
McGrath, M. J.....Owatonna
McGuire, A. J.....Grand Rapids
McIntyre, P. J.....Roberts, Wis.
McIntosh, S. M.....Renville
McGann, John.....Pine City, R. 2
McIlrary, S. B.....Austin
McKay, Neil.....Gardner, N. D
McKerchev, Peter.....Stirum, N. D.
McKusick, Mrs. Herbert N.....Stillwater
McLaughlin, W. W.....Madelia
McMurran, Mrs. Eleanor.....
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McLree, Harry.....Regina, Sask.

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N

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Nation, J. W.....Fremont, Neb.
Nealey, Walter.....Deer Creek
Nelson, Geo. S.....Foxley, Sask.
Negus, T. R.....Jamestown, N. D.
Nelson, J. P.....Fairmont, N. D.
Nelson, Peter.....Red Wing
Nelson, O. L.....Wayzata
Nelson, C. G.....Lindstrom
Nelson, M. O.....Hartland
Nelson, Peter .....Westbrook
Nelson, M. L.....Langdon
Nelson, C. N.....Storden
Nelson, Hans.....Fergus Falls
Nelson, S. H.....Finley, N. D., R. 2
Nelson, Chas.....Atwater, R. 2, Bx 57
Nelson, Wm.....Menoken, N. D.
Nelson, M. O.....743 Lbr. Exch., Mpls.
Nelson, J. M.....Grand Meadow
Nelson, F. A.....Atwater, R. 6
Nelson, Helge .....Raymond
Nelson, Oscar W.....Dearwood
Nelson, Ludvig.....Donnelly
Nelson, Nels J.....Hills
Nelson, John P.....Stillwater, R. 2
Nesseth, T. H.....Fertile
Nesbitt, B. J.....Excelsior
Neuenschwander, D.....Fessenden, N. D.
Nestfield, J..... Melrose
Newell, J. P.....Hewitt
Nelson, H. C.....Kennedy
Nelson, Peter .....Clements
Nelson, N. H.....Madison
Nelson, Chas.....Rush City
Nelson, Peter E.....Montevideo
Nelson, A. P.....Maynard
Nelson, Jacob .....Beltrami
Nelson, S. B.....Luverne
Nelson, O. M.....Elk River
Nelson, Miss Olivia.....St. Hilaire
Nelson, Olaf.....St. Hilaire
Nielson, Geo..... Braham
Niederriter, W. F.....Kenmare, N. D.
Nieman, Chas.....
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Nilson, R. J.....Kerkhoven
Nilstum, A. M.....Hallock
Nichol, Adam .....Hendrum
Nimer, L. H.....New York Mills
Norby, A.....Madison, S. D
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Nowlin, J. T.....Jamestown, N. D.
Norton, M. E.....West Concord
Noble, T. E.....Albert Lea
Noehn, Adolph.....Madison Lake
Northam, Chas. H....Lyndale Sta., Mpls.
Nomeland, Kunrick S.....Porter
Noffsinger, J. W.....Campbell
Nordby, E. J.....Renville
Noble, D. A.....Windom
Nortin, Gust. P.....Pine City
Noble, A. S.....Dent
Norris, J. R.....LaCrosse, Wis.
Noerenberg, Fred..Cascade Springs, S. D.
Nordine, Chas G.....Lake City
Nutter, F. H.....710 Sykes Blk., Mpls.
Nydahl, J. L.....915 20th av. S., Mpls.
Nyberg, John .....Milaca
Nygvist, Gust.....Fertile
Nye, J..... Kimball
Nystrom, Gust .....Worthington
Nygaard, K. S.....Kellys, N. D.
Nygaard, C. H.....De Lamere, N. D.
Nygaard, Otto .....Hallock

O

Oakland, H.....Aneta, N. D.
O'Conner, James.....Hazel Run
O'Connors, P. H.....Hick's Wharf, Va.
O'Connor, Mrs. J. P.....
.....2057 Selby av., Merriam Park
Ohm, F. H.....Mapleton
Ogard, R. A.....Kenmare, N. D.
O'Donnell, J. L.....Slayton
Ohm, Richard .....Gully
Ogilvie, Jas.....Blue Earth
Odenthal, Willie .....Pine City
Ohe, Torger L.....Rothsay
Olen, B. M.....Shelly
Olstad, Isaac.....Shelly
Odell, Mrs. Rob. R...2836 Irving S., Mpls.
Olson, Otto.....Effington, S. D.
Oleson, C. E.....Perley
Oleson, M.....Montevideo
Olsen, H. P.....St. Louis Park
Olson, N. F.....206 S. 4th st., Mpls.
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Oliver, W. E.....Worthington
Olsen, T. K.....Brewster
Olson, E. G.....Clark's Grove
Olney, Will.....Knox, N. D.
Olson, N. C.....Hoople, N. D.
Olson, J. B.....Willmar
Olson, Lewis.....R. 3, Hillsboro, N. D.
Olsen, Ole .....Luverne
Olson, Olaf .....Steen
Olson, Gilbert .....Osakis
Olander, Frank .....Braham
Olson, O. J.....Bigfork
Olson E. S.....Milan
Olmlee, O. J.....Foreston
Opheim, Andrew .....Fertile
Oredalen, Ole .....Kenyon
Orton, C. J.....Marietta
O'Neill, O. H.....
.....608 Globe Bldg., St. Paul
Omstad, John .....Clinton
Ongstad, H. H.....Pelican Rapids
Oren, T..... Hanska
Opsahl, L. C.....Emmons
Omland, Erick .....McIntosh
Omang, B.....Meckinock, N. D.
Omunson, Sam .....Lancaster
O'Neil, J. H.....Park Rapids
Opdahl, Iver .....Beltrami
Osborn, John.....Dassel
Ostlie, C. H.....Montevideo
Ostern, L. N.....Montevideo
Otto, A. J.....Crystal, N. D.
Ott, Henry .....Sherburn
Oleson, C. E.....Underwood
Olsen, L. P.....Underwood
Olson, O. S.....Rothsay
Olson, A. K.....Clinton
Olson, L..... Canby
Older, C. E.....Luverne
Older, F. E.....Luverne
Olson, Aug. P.....Kennedy
Olson, O. A.....Florence, S. D.
Olson, Nels .....Atwater
Olson, Mrs. Amelia.....White Bear
Oustav, F. L.....Fertile
Owen, S. M.....830 Henn. av., Mpls.
Overgaard, P. H.....Albert Lea
Oyen, O. J.....Watson
Oxton, Wm.....Sherbrooke, N. D.
Owens, Math.....Mazeppa

P

Pabody, E. F.....Excelsior
Palmer, Wm. H.....Brownsdale
Page, H. A.....Carrington, N. D.
Pagenhart, Chas. W.....Epworth, N. D.
Page, Leslie.....Pleasant Grove

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Painter, D. H.....5400 Nic. av., Mpls.
Palm, Ludvig .....Cottonwood
Parker, M.....Manly, Ia.
Parks, W. S.....Amboy
Parker, W. L.....Farmington
Parsons, W. T.....Truman
Parsons, T. D.....Owatonna
Parks, R. M.....Shell Lake, Wis.
Parv, O.....New York Mills
Parker, A. L.....Sauk Center
Parry, Mrs. Anna T.....Petrel, N. D.
Payne, Capt. S. D.....Kasota
Patten, H. G.....Charles City, Iowa
Paulson, G. C.....Elbow Lake
Paulson, Martin.....R. 1, Hanska
Payne, A. W.....Milnor, N. D.
Paulson, H. M.....Steen
Pauly, Nic..... Chanhassen
Paulton, J. P.....Taunton
Patton, U. T.....Osseo
Patras, Alfred.....Glenburn, N. D.
Pattin, N. B.....303 Central av., Mpls
Perley, Geo. E.....Moorhead
Peiffer, Rev. N. J. Al.....Eden Valley
Perry, P. H.....Excelsior
Perkins, T. E.....Red Wing
Pengilly, J.....R. 1, Osseo
Penney, John.....Cushing, Wis.
Pedersen, H. C.....Hopkins
Pendergast, R. H.....
.....4327 Puleston av., Duluth
Pedersen, And. W.....Comfrey
Pederson, P. A.....Beardsley
Persons, C. O.....Dundas
Peck, E. F.....Austin
Pederson, R. C.....R. 1, Minot, N. D.
Perkins, Jas....Bx 42, Race Track, Mont.
Penning, Martin.....New Ulm
Pennington, H. K.....Milnor, N. D.
Pederson, M. P.....Walnut Grove
Person, Lewis.....R. 2, Robbinsdale
Perry, G. S.....Farmington
Pederson, Sigurd .....Ruthton
Pedersen, A. B.....Rothsay
Perkins, Orin W.....Devils Lake, N. D.
Peterson, Andrew .....Belview
Peterson, O. M.....Albert Lea
Peterson, P. H.....Atwater
Peterson, Alvin.....Astoria, S. D.
Peterson, V. C.....Renville
Peteler, Mrs. E.....
Pettis, Chas.....Madella
.....4315 Penn av. N., Mpls.
Pfaender, Jr., Wm.....New Ulm
Pfaender, Max.....New Ulm
Pfister, J. M.....Marietta
Pfeiffer, John.....R. 1, Minot, N. D.
Peterson, Jos.....Lake Crystal
Peterson, T. B.....Blooming Prairie
Peterson, And..... Fertile
Peterson, Chas. B.....bx 11, Litchfield
Peterson, Geo. R.....R. 2, Collis
Peterson, J. T.....New Ulm
Peterson, P. S.....R. 3, Nicollet
Peterson, C. O.....R. 2, Willmar
Peterson, L. J.....R. 2, Olivia
Peterson, P...2629 Lyndale av N., Mpls.
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Peterson, F. J.....Waconia
Peterson, Chas. V.....Stanchfield
Petersen, Paul C.....Flaxton, N. D.
Peterson, Axel J.....bx 96, Hinckley
Peterson, Ludvig .....Lancaster
Peterson, M. A.....Hallock
Petterson, S. G.....Redwood Falls
Peuske, Julius .....Sauk Rapids
Peterson, Ole.....Rothsay
Peterson, K. K.....Rothsay
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Pinz, John F....R.F.D. 2, New Brighton
Pinker, Paul.....Milbank, S. D.
Pickle, Ralph H.....Albert Lea
Pinney, J. P.....Lidgerwood, N. D.
Pickard, W. O.....Niagara, N. D.
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Poppler, John .....Chaska
Pond, E. R.....R. 1, Mpls.
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Porter, J. F.....Red Wing
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Polak, F. L.....Glencoe
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Q

Quiring, J. J.....Mt. Lake
Quin, W. S.....Spring Valley

R

Rath, Henry J.....Pine City
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Ramler, Herman .....Torah
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S

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Sonenek, Joe.....Minnesota Lake
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Sorenson, S. J.....Tyler
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Spates, S. R.....Wayzata
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Sprague, Clifford .....Madella
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Spofford, O. J.....Wheaton
Spence, John .....Montgomery
Sperry, A. H.....Willmar
Spear, C. C.....Elk River
Spiess, C..... Norwood
Spieker, Wm..... Melrose
Sprung, H. F.....Ada
Sparre, Eric.....Elk River
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Stack, Paul .....Odessa
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Sutter, John .....Wadena
Stout, W. H.....Osseo
Stoa, Martin.....Albert Lea
Stockdill, J. A.....Madelia
Styrlund, David V.....Strip
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Street, Wm..... Beltrami
Strandness, Lamar .....Glenwood
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Stone, Allen.....Halsey, Neb.
Strate, E. B.....658 Plum St., St. Paul
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Swensen, Gunder.....Norway Lake
Swan, J. W.....White Bear
Swenson, Chas..... Braham
Swanson, C. E.....Cannon Falls
Swenson, Gilbert .....Lamberton
Swansen, Geo..... Sherburn
Swanson, T..... Monterey
Swanson, Chas. V.....Mora
Sweezey, B. F.....Clinton
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Synoground, N. O. P.....Groton, S. D.
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Swanstrom, Nels.....Lake Park
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Swift, L. R.....312 3rd Ave., St. Cloud
Swenson, Adolph.....R. 3, Hawley
Swenson, C. W.....Lafayette
Swisse, Julie.....Bainville, Mont.

T

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Takle, Ebert.....Walnut Grove
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Taylor, L. A.....Belle Plaine
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Terbering, M. P.....Larimore, N. D
Telander, Henry.....Petersburg, N. D.
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Teachout, A. E.....Glencoe, N. D.
Temple, Chas.....Salmon, Idaho
Tengsdahl, Carl .....Hendrum
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Thellman, Geo..... Excelsior
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Thomson, Wirt A.....
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Thuesen, Isaac.....Mountain Lake
Thurman, John.....Eden Valley
Thompson, E. E.....Buffalo
Thorn, G. A.....Kasson
Thompson, R..... Chandler
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Thomforde, F. H.....Goodhue
Thomas, E. L.....Vergas
Theandsen, T..... Canby
Thompson, R. H.....Hendrum
Thorgerson, Ole.....Hanley Falls
Throndson, Johanas .....Underwood
Thormodson, N. E.....Dalton
Thew, Geo. G.....Vernon Center
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Tlain, Sam.....Lory
Tjoswold, S. O.....Granite Falls
Tollefson, Tollef.....Hanley Falls
Tollefson, John .....Hazel Run
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Manning, Mrs. Jacob W.

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